

US tunamen cut porpoise kill

AMERICA'S tropical tuna fishery in the Pacific has achieved the lowest porpoise mortality rate on record.

Only about 3,600 of the air-breathing mammals were killed in purse seines during the first quarter of this year. Should this rate continue, mortalities will come to only about 14,400 porpoise for the entire year.

The 1978 porpoise mortality quota, set by the government, is 51,947.

Even though the fleet is not likely to register such a low kill rate for the three

Lowest mortality on record

remaining quarters, it is in no danger of nearing the quota.

Dr. William F. Fox Jr., chief of the National Marine Fisheries Service Oceanic Division at La Jolla, California, said the extremely low porpoise mortality was due mainly to the fleet catching most of its tuna on mixed shoals of yellowfin and skipjack congregated around logs.

Usually about 70 per cent of the catch is made on yellowfin that swim with porpoise, whose leaps out of the water betray their presence.

The purse seiners then launch speedboats to corral the porpoise for the set on the fish swimming beneath them.

Dr. Fox credited the NMFS's porpoise rescue programme and co-operation of the fleet with lowering mortality from an

annual 309,000 animals eight years ago to 27,000 last year.

He added that even the national environment groups that had long put pressure on the government and the tuna industry to stop the porpoise killing, now concede the programme's success.

Everybody deserves a part of the credit, said Dr. Fox. "Without the environmental groups, the government resources wouldn't have been put on the problem, and without the industry's level of co-operation, we wouldn't have been able to conduct the research at sea."

SIXTH PLAN CATCH BOOST

FISH production is expected to almost double as a result of the Tamil Nadu government's sixth five-year plan (April 1978-March 1983) for its marine and inland fisheries.

The government of this Indian state says its objective "will be to attain a production level of 400,000 tons of marine fish and 225,000 tons of inland fish a year by the end of the sixth plan."

A multi-pronged strategy has been drawn up to achieve this, including increasing the number of trawlers based in the state. Two were recently imported from Mexico and it is hoped more will follow.

More attention will be given to the smaller fishermen including finance to buy modern fishing gear and motors for their traditional vessels. In addition, 200 outboard motors will be imported from Japan.

Japanese in B.C. jobs row

IMMIGRATION officials in British Columbia have been investigating the use of Japanese nationals in the herring and salmon roe industry.

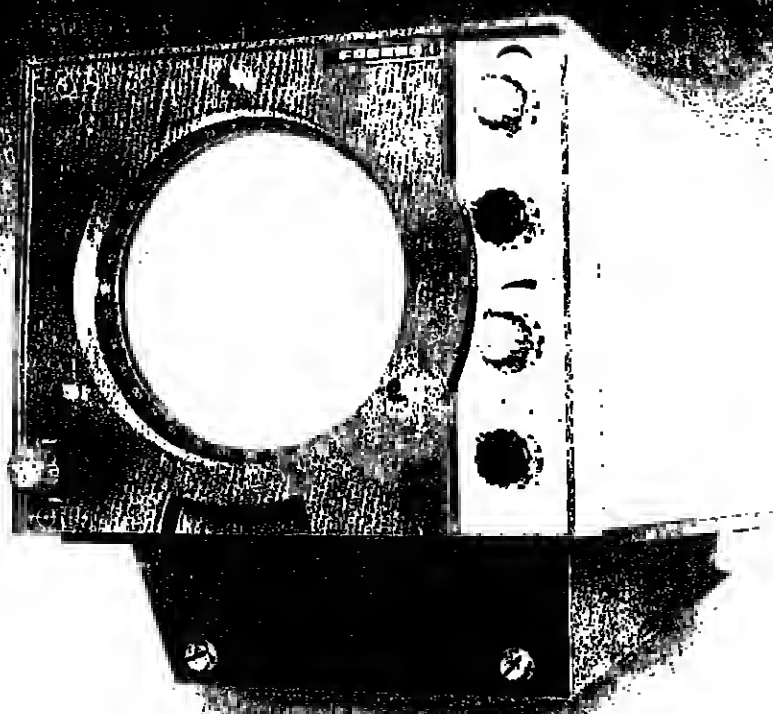
This follows complaints by the United Fishermen and Allied Workers Union that about 280 technicians brought into B.C. by Japanese firms were doing jobs that could have been done by Canadians. Japan is the market for the \$130 million seasonal herring roe fishery which began in 1971.

As part of their contract with B.C. suppliers, the Japanese insist on sending their own quality control supervisors over to Canada.

While they do not argue with this, Union officials allege that there has been an encroachment on tasks, which they say should be done by their members.

The Japanese have agreed to train Canadians to do the work but there is apparently no evidence that any have yet filled the jobs.

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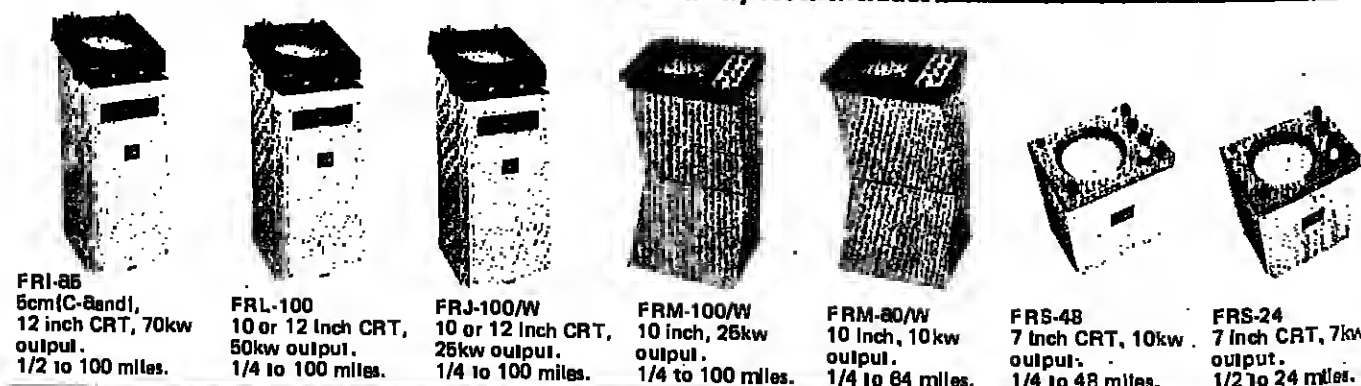
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BRITAIN ACTS TO SAVE HERRING

Venezuela charter venture

VENEZUELA has chartered five fishing vessels for six months from the Spanish north coast port of Lequeitio.

The boats will work off Venezuela and receive a guaranteed price of 3.5 bolivars (about £0.45 a kilo) for their fish.

If the venture looks like succeeding, the charters will be extended and other boats may be brought out.

Minister urges a total ban

BRITAIN'S Fisheries Minister John Silkin has all-party backing for his firm stand against the EEC on threatened herring stocks and on a larger British share of fish quotas.

Herring is the most urgent of the two issues and is the immediate cause of confrontation with the EEC.

When the EEC Council of Ministers dithered last month over further drastic cuts in catch, Minister Silkin stressed that these were essential to save the resource.

Herring fishing in the North Sea is already banned, and it was British action that helped force this through. Now there is acute concern over the state of stocks off the west of Scotland.

At the EEC meeting, the British wanted the previously agreed total quota of 56,000 tons (39,000 tons to the UK) slashed to nothing.

"There is clear, independent scientific evidence that this stock is in danger," Mr. Silkin told the House of Commons.

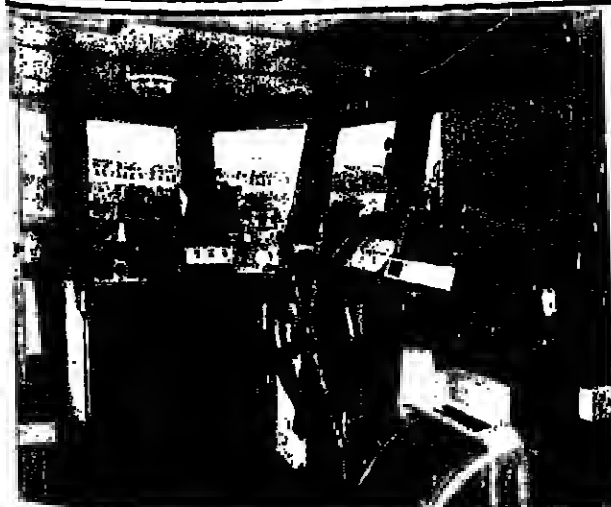
Last week Britain was going through the formal stages which could lead to a unilateral ban. And the opposition Conservative Party agreed that this was the "only course open to the Minister."

The Scottish west coast herring shoals, it added, "are particularly vulnerable to the next three months during spawning time and these should be protected immediately."

Already Iceland and Norway have faded to insignificant herring catches. Denmark, the Netherlands and Britain are joining them. In the North Atlantic, only Canada appears to have a resource.

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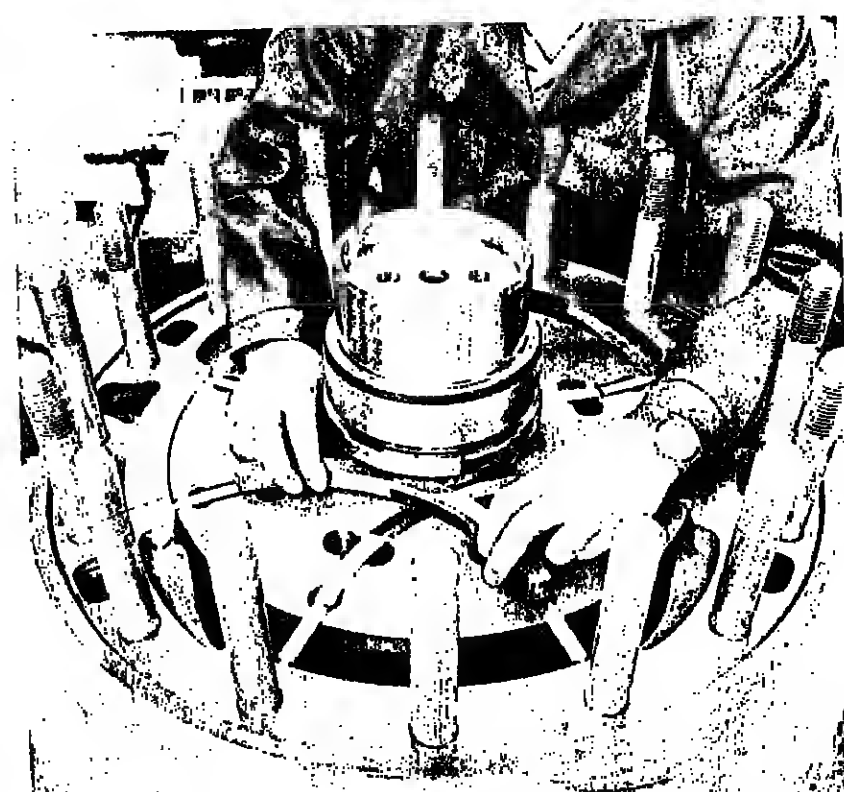


Seiner nerve centre

AN IDEA of the array of electronics carried by a modern Scottish seiner/trimmer can be gained by a look inside the wheelhouse of the "Sunbeam."

For fish finding this new 85 ft. (25.9 metre) vessel has an Elac LAZ 72 echo sounder with LAZ 62 flashlamps. She carries Decca 110 and Japanese Oki radars. There are also two Merk 21 Decca Navigator receivers and a 350T track plotter.

Radio equipment comprises Sello ssb and vhf. Turn to page 34 for further details.



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Scottish Seiner Smashes Grand Banks Records

JUNE was a month of records for the Scottish seiner *June* IV working far from home over the Grand Banks of Newfoundland. And she was not poaching in Canada's 200-mile limit.

Skipper William Strachan's 86-ft (26.2 metre) long steel hulled vessel was chartered to experiment with Scottish seining in Canadian waters.

During May, the *June* IV completed four trips on the south-west edge of the Grand Banks and brought in 3,000 boxes. Most of the haul was flatfish such as grey soles and flounders. Her best single trip was 860 boxes in 3½ days.

Last month the boat went pair trawling with the 80 ft Canadian vessel *Benthic Venture* off the Funk Island Bank; and she used her seine nets in depths of 200 to 500 fathoms.

On June 21, she came into Harbour Grace, Newfoundland, with 1,450 boxes taken in 21 seine net hauls over six days' fishing. Included in this landing were 1,000 boxes of flounder and 200 of grey sole.

Catches by the *June* IV during this trip are reported to have surpassed those of Canadian stern trawlers in the 150 to 160 ft range.

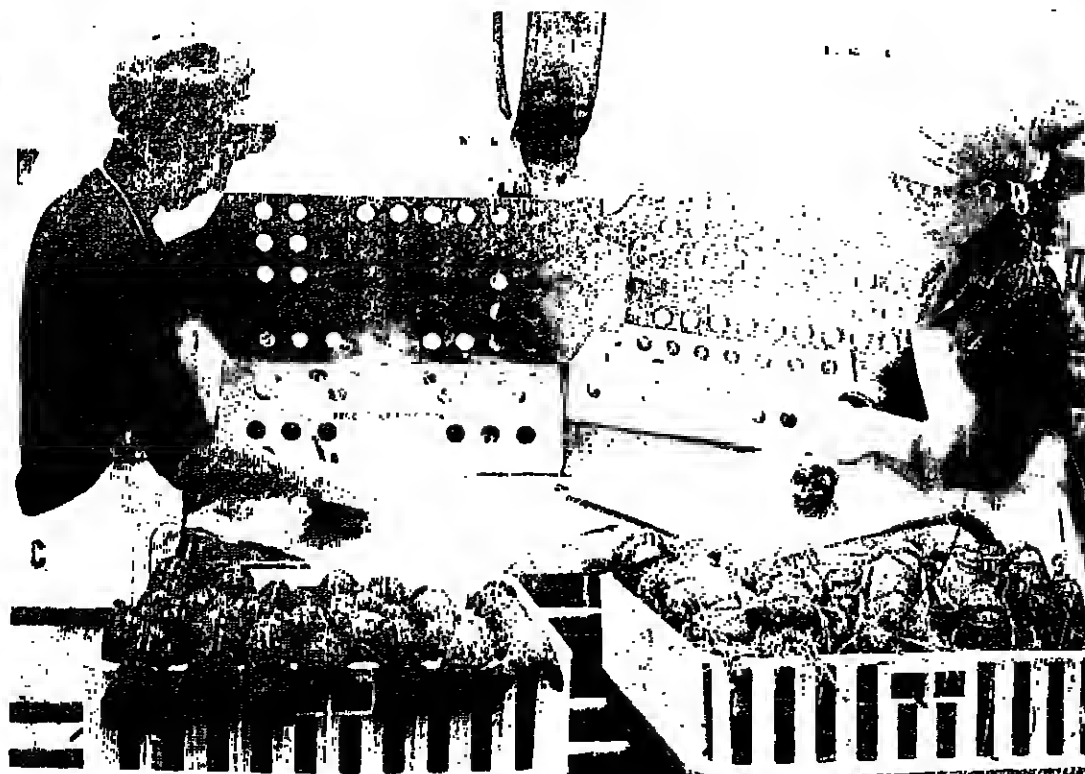
Extra quota

AN EXTRA quota of 7,400 tons of Arctic cod has been allocated to Norwegian wet fish trawlers grossing 250 tons and up to 115 ft long.

The allocation is on the basis of 100 tons a vessel plus five per cent of yearly quota.

Participation in the Arctic cod fishery was less than expected, leaving an excess.

Season cut short as Western Australian landings climb to new record



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WESTERN Australia's rock lobster season has closed six weeks early with new records in catch and earnings.

At more than 10,000 metric tons, the catch was about 11 per cent higher than in 1976/77, which was itself above average.

Large numbers of under-sized lobsters were returned to the sea by fishermen during the 1977-78 season and there was a big settlement of juveniles on the reefs in 1975. These are seen as favourable

pointers to another good season next year, reports Peter Pownall.

The advanced cash price paid to fishermen by co-operatives at the start of the 1977-78 season was a record \$A5 a kilo.

Down and up

It fell later to \$A4.30 in sympathy with a drop in United States wholesale rates which were down to \$US16.03 a kilo in February for 6-8 oz. tails.

As the season progressed,

United States prices rose above \$US16.30 and the end of season the price to fishermen was \$4.64 a kilo.

While fishermen are delighted with the excellent 1977-78 season, researchers and managers say there is still cause for concern if fishing is increased.

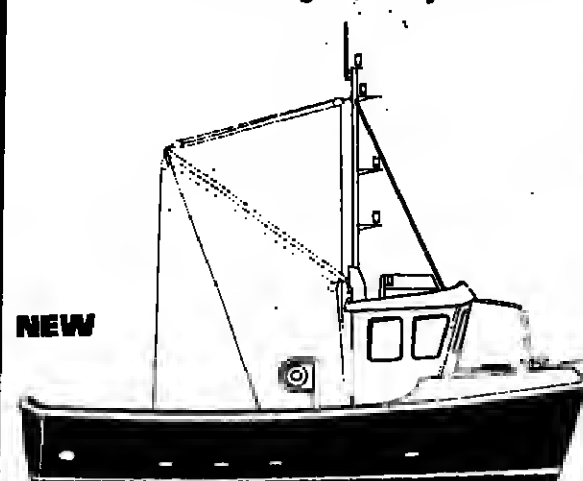
Most Western Australian rock lobster is sold to the United States as frozen tails.

Increasing numbers of whole, cooked rock lobsters also are being exported to the Far East and to Europe.

And the Japanese buy them live

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Poles back to buy Canada herring

Bulgarians shop for mackerel

AN application from Bulgaria to have ships buying and processing mackerel off the Outer Hebrides of Scotland has been approved by the authorities at Stornoway.

The "klondyking" will take place at an anchorage within Stornoway harbour.

During August to October six to nine Bulgarian refrigerated stern trawlers, of 2,500 tons each, will be taking mackerel direct from British catchers and freezing it aboard.

Up to three ships can be accommodated at Stornoway. The others may be based at Ullapool.

POLAND is to buy herring direct from Canadian Bay of Fundy fishermen for the third consecutive year, Fisheries Minister Romeo LeBlanc has announced.

The Poles are to be allowed 5,000 metric tons at \$225 a ton.

When they started in 1976, reports *FN* correspondent Alex Binkley, they were allowed 15,000 tons and paid about \$110 a ton.

The Canadian fishermen deliver their catches directly to Polish vessels.

Back in 1975, Mr. LeBlanc's first full year as Fisheries Minister, fishermen were earning \$35 a ton for herring for reduction.

Mr. LeBlanc wanted the fishery switched to food production and his department helped to organise the Atlantic Herring Fishermen's Marketing Co-operative.

This played a key role in getting herring vessels taken over by fishermen.

Then came the Poles offering \$110 a ton and the fishermen were able to force Canadian companies to offer more.

"The high foreign prices then gave our fishermen a secure market to depend on during the changeover of our fishery," Mr. LeBlanc said. "In effect, the Polish sales made possible the change in the Bay of Fundy fishery."

This year the fishery is expected to earn \$17 million for the fishermen.

"This is the mid-1970s biggest fish success story for any Atlantic fishery," Mr. LeBlanc continued.

While Poland was getting

less fish, her co-operation in this developing fishery might be repeated in another.

"The higher Polish prices keep competition alive," said Mr. LeBlanc.

This year, the Canadian price for top quality herring will be \$198 a metric ton.

The transformation in the fishery has brought a 500 per cent increase in the value of herring products from domestic plants and a fivefold increase in work-weeks at domestic processing plants.

WHO WANTS TO FISH IN OUR WATERS?

THE Australian government has announced that it is prepared to receive proposals from foreign governments or fishing interests seeking fishing rights in the new 200-mile zone.

The Australian Minister for Primary Industry, Mr. Ian Sinclair, whose portfolio includes fisheries, emphasised that allocation of any such rights would not apply to fisheries already fully exploited by Australians or likely to be in the near future.

At the same time Australia recognised her international obligation to permit foreign fishermen access to surplus stocks in the fishing zone on terms and conditions determined by Australia, and her responsibility to protect the marine environment.

In assessing proposals for foreign participation in the Australian fishing zone, the government would want to ensure the best economic and other benefits to Australia, Mr. Sinclair said.

Proposals must be submitted to the Australian government by August 31, 1978.

It is expected that the Australian 200-mile fishing zone will be proclaimed later this year (See Pages 28 and 29).

● MANUEL Perez Fernandez, skipper of the Spanish trawler *Vieira Seta*, has been fined \$3,500 for fishing with undersized mesh in waters off the east coast of Canada. A salt cod catch worth \$9,000 was ordered to be confiscated.

USSR doubles salmon haul

ONE OF THE more remarkable fish production figures for 1977 is that of Pacific salmon in the Soviet Union. This was just under 140,000 metric tons and represented an increase of 100 per cent over the 1976 haul of 69,700 tons, and 70 per cent above the 1975 catch of 82,900 tons.

The real comparison should be with 1975 because the Asian pink salmon runs are much larger in odd-numbered years.

Using this comparison, it does seem that some interesting developments have been taking place in Soviet salmon fishing. The first, of course, is the drastic reduction in the Japanese high seas salmon quota and the effect on Russian fishing of the new 200-mile limit. For the first time since the mid-1950s the Soviet catch exceeded Japan's high-seas salmon haul.

Another factor is the improvement in overall salmon production through hatcheries. The USSR is a strong proponent of salmon enhancement and it does seem to be reaping the benefit of stock improvement programmes feeding into many rivers and streams in the Soviet Far East.

This work probably contributed to the chum salmon rise of 68 per cent and also to a 38 per cent rise in coho and chinook. But it is not known what effect enhancement work had on the jump in the catch of pink salmon. At 114,270 tons, the 1977 catch was 86 per cent above the average of the five previous odd-year catches.

India state gets \$17m fish loan

THE Development Association (IDA) has approved credit of US\$17.5 million to support a project to increase shrimp and fish production in the Indian east coast state of Andhra Pradesh.

It will be used in a \$36.5 million project for harbour improvements at Kakinada, Nizampatnam and Vishakhapatnam for enlarging the fleet of mechanised fishing vessels.

NO AGREEMENT OVER CAPELIN

LAST MONTH'S Barents Sea negotiations between Norway and the USSR ended in Moscow with some progress but no real agreement on the main issues. Most ominously, the two countries were not able to agree on national quotas nor on total allowable catches of capelin for the summer of 1978 or the winter of 1979.

The Russians wanted a 50-50 split while the Norwegians maintained that a 75-25 split would reflect historical catches. There was also no agreement over area sanctuaries for immature capelin. But a 15 per cent mix of capelin less than 10 cm will be allowed with fishing to stop if the percentage should increase. The Norwegians have been allocated 1,000 tons of prawns from the Soviet zone to the end of September.

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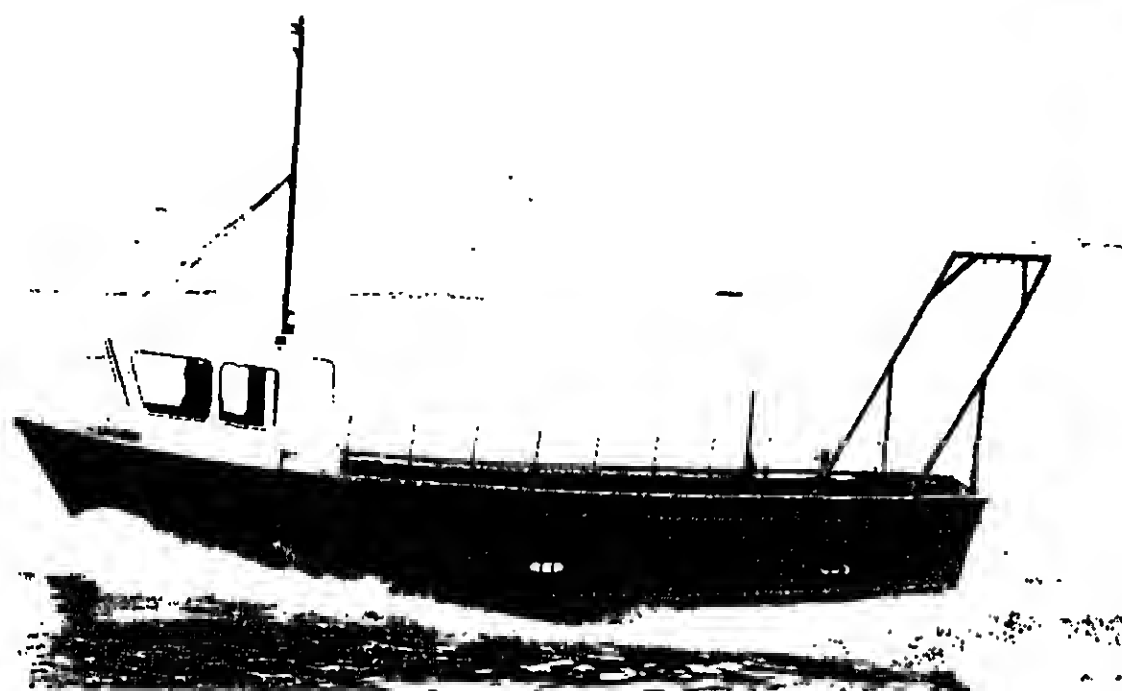
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people engaged in an industry that is
harvesting and handling 73.5 million tons of
aquatic creatures and plants a year.

Chance for Norway

to show the world

comment

THE ORGANISERS of the Nor-Fishing
exhibition have come under considerable fire
from the fishing industry in Norway for their
decision to persevere with their two-yearly
showing, and to transfer from Trondheim to
Oslo. The two decisions, unfortunately, had to
go together. The exhibition has outgrown the
attractive but limited fair site in Trondheim.
We did suggest sometime ago that it might
move to Tromsø, and this was supported by
many people in the northern city.

But the organisers are now on
their own without the financial
backing of the Fisheries
Directorate, and with an exhibi-
tion that reflects Norway's place
as a world-wide supplier of
expertise and equipment. For this,
Oslo with the large and convenient
Sjølyst Center is an appropriate
venue. Given the chance, Nor-
Fishing could develop even further
— from an international
European occasion to an in-
ternational world meeting place.

It is for this reason that we think
that another Nor-Fishing decision
— to invite FAO to help in the
preparation of a two-day seminar
on developing countries — while
derided locally, will in the long-
term enhance the good reputation
of the exhibition and gain it
considerable additional support
from suppliers.

Norway, through NORAD and
her work with FAO and other
international agencies, is a ge-
nerous sharer of her wealth and
her experience with fishing
countries much poorer and less
fortunately placed. This may not

be admired by those whose vision
is as far as the cliffsides of a
narrow fjord, or the horizon as
seen from the deck of a 25 ft. skjark.

But it is increasingly recognised by
Norwegian manufacturers whose
names are becoming known
wherever a fish is sought, caught
and landed; and, we are optimistic
enough to hope that it is also
gaining some acceptance by the
more progressive fishermen, vessel
builders and fishery scientists.

Under the energetic direction of
FAO's Phil Appleyard, the two-
day seminar on November 21 and
22 will build up its own
momentum and should stimulate a
valuable exchange of ideas and
information. But Nor-Fishing is

planning another seminar later
that week which should draw
fishermen and processors from all
over Western Europe. This will
review Norwegian experience in
the blue whiting fishery.

From the preliminary announ-
cement of the one-day seminar on
November 24, it is planned to be
conducted by Norwegians in
Norwegian. We hope however
that they will consider sharing
their experiences with others and
that the conference facilities of the
Sjølyst Center will permit simul-
taneous interpretation into
English. They might also invite a
few others from outside Norway
to pass on their experiences with
blue whiting.

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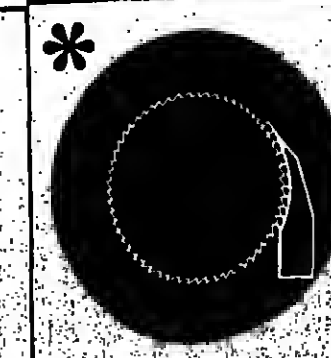
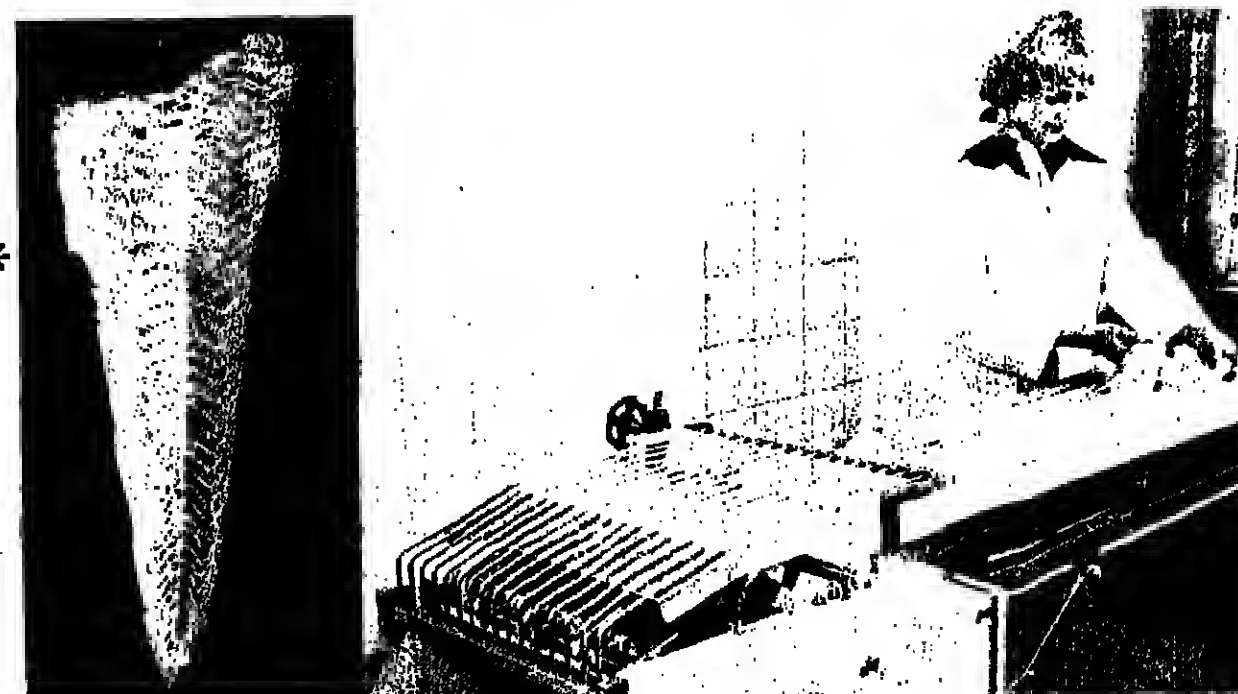
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Wesmar news

Sonar leads to success

Shrimper equips boats with WESMAR



George McMurrick, Jr. has equipped his three fishing vessels, the *BLUE MAX*, the *LISA ROSE* and the *MASTER CHARGE*, each with WESMAR SS160 scanning sonars. "I use the SS160's for dodging rocks and staying away from hang ups," said McMurrick.

Three years ago, George McMurrick, Jr., a shrimper from Ilwaco, Washington on the West Coast of the United States, installed a WESMAR scanning sonar on his *MS DANA* to improve his drugging capabilities. Today, although McMurrick has sold the *MS DANA*, he owns three other boats: the *BLUE MAX*, the *LISA ROSE* and the *MASTER CHARGE*, and has equipped each with a WESMAR SS160 scanning sonar.

"I use the SS160's for dodging rocks and staying away from hang ups," said Captain McMurrick. "The

SS160 gives me confidence to drag right up to hang ups and the ability to pull out before I snag."

"WESMAR's sonars are easy to operate, too. A WESMAR factory representative stayed on fishing with me until I had the confidence to operate the sonar. It took me only half an hour to learn to read the CRT, and then I taught one of my captains to use the sonar in 15 minutes," he said.

McMurrick's SS160 allows him to drag areas he is unfamiliar with. "Not long ago," he said, "we went up around Victoria Island in

Canada. We'd never been in the area before, but we just turned the sonar on and found a spot with fairly clear bottom and began dragging. Without scanning sonar, we would never dare go into an area we didn't know, but with it, we knew right where the clear areas were."

"Some other boats were dragging in the same area using fathometers. They were familiar with the area and knew where the hang ups were. They would drag in the same direction as we were, and then when they were coming up on the hang ups, would turn around. We kept going right up to the rocks, because with the SS160's, we knew exactly where they were. We plugged the boats in three days," said Captain McMurrick.

McMurrick said when they were headed to the grounds, they liked to play with the sonar. "I like to turn the SS160 on B-scan, the scanning sonar mode, and take a look at what's around us. Sometimes, I wish I had a net for mid-water just to pull up what we see on the sonar."

The SS160 helps McMurrick save money. "With the SS160, I have the confidence to drag anywhere and know I'll stay out of trouble. That's where the sonar makes me money. Let's say you hang up and tear a net," he said. "It could cost anywhere from \$200 to \$300 to get it fixed or several thousand dollars to replace it, and that doesn't include the time lost."

"Because of that, I say the sonars pay for themselves in a season by just keeping you out of trouble. If it keeps you from hanging up just a few times, then it has paid for itself," said Captain McMurrick. "You just have to go out in the boat with the sonar, get your confidence using it and you can fish anywhere you want."

Long-range, shallow-water fishing opens with sonar

This spring, Efrén Ruiz Martínez, Captain of the *PRODUCTOS PESQUEROS MEXICANOS (PPM) DP-15* and WESMAR's representative in Mexico sailed from Guaymas, Sonora, Mexico aboard the *DP-15* equipped with a WESMAR scanning sonar in search of sardines.

Captain Martínez had been operating the WESMAR SS200B sonar successfully at 100 metres, but wished to learn longer-range operation in depths of five fathoms or less. For this reason, the WESMAR representative was accompanying Captain Martínez to instruct him in the proper use of the sonar for these conditions.

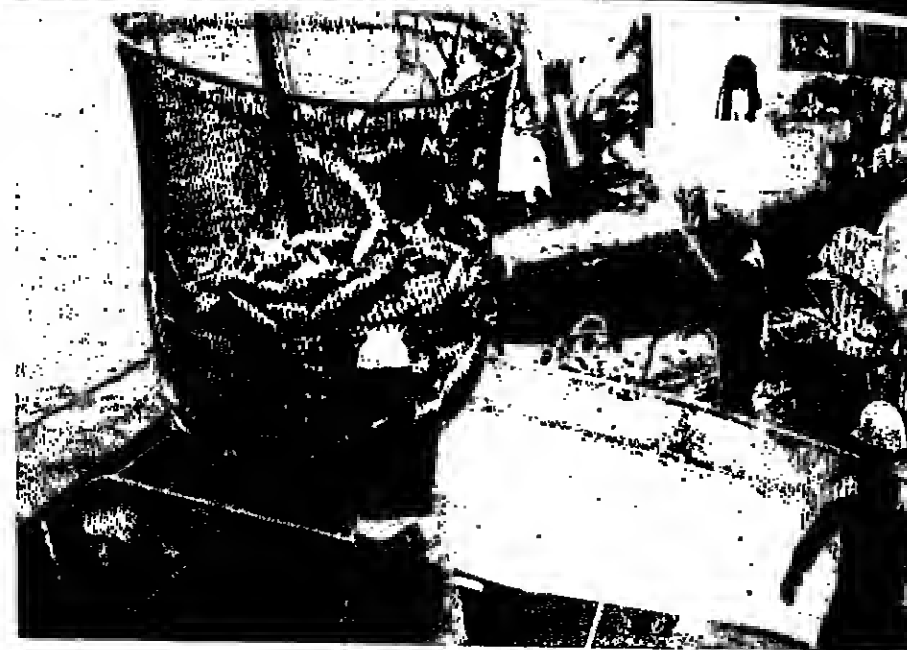
Captain Martínez and the WESMAR representative fished together for 35 hours in three fathoms using a sonar search range of 400 metres. During the 35 hours, they set four times. Fish could be seen on the sonar at ranges to 400 metres, allowing Captain Martínez to successfully locate his skill in relation to the school.

The *DP-15* returned with a total haul for the four sets of 115 tons of Monterey sardines. Captain Martínez is a happy customer who now feels confident in using his WESMAR SS200B in long-range, shallow-water conditions, a technique which will continually add to his profits.

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Captain Efrén Ruiz Martínez and a WESMAR representative spent 35 hours fishing together in three fathoms using a sonar search range of 400 metres. The end result was a total haul from four sets of 115 tons of Monterey sardines.



Over 100 tons of tuna were brought aboard the *JEANETTE C* in the fishing grounds west of the Samoa Islands in the Pacific Ocean with the help of the WESMAR SS230 scanning sonar.

Sonar aids tuna fishery in Pacific 100-ton catch

WESMAR scanning sonar's value aboard purse seiners is long established, with thousands of successful WESMAR owners worldwide. Purse seining for tuna, although a newer application for WESMAR sonar, is producing profitable results aboard tuna boats.

An example is the tuna super-seiner *JEANETTE C*, owned and operated by George and Ben Fukizaki, Martin Jacobs and Richard Chikoni. Fishing for Van Camp Seafoods, the *JEANETTE C* is equipped with the WESMAR SS230 low frequency scanning sonar and R50 chart recorder.

In April, along with WESMAR representative Greg Blakey, the *JEANETTE C* and crew were concluding a charter for the Pacific Tuna

Development Foundation to develop western Pacific tuna fisheries. While in the fishing grounds west of the Samoa Islands, the *JEANETTE C* made a set on schools of tuna which proved the value of the SS230 sonar.

A floating log was sighted with surface feeding fish and birds surrounding it. On closer examination with the SS230 sonar, a school of bait fish and large schools of shipjack and yellow fin tuna were spotted beneath the log. The tuna ranged in depth from 20 to 65 fathoms as indicated on the SS230 depth computer. The log was marked with a flag and radio buoy for tracking through the night.

Before daylight, Captain Fukizaki brought the *JEANETTE C* into position

for a set around the log. Customarily, the boat is so crosswise to the current leaving the log in the forward part of the net. The SS230 sonar, however, indicated the tuna were to the side of the log. The SS230 sonar also showed the yellow fin tuna at 80 fathoms, unusually deep for yellow fin.

Captain Fukizaki made his set where the sonar showed the tuna to be, not where visual methods indicated. Following the information on the SS230 CRT resulted in a set of over 100 tons of tuna.

"The sonar is excellent for checking the position of the school," said Captain Fukizaki. "The SS230 also shows the size and depth of schools."

Full-time use proves sonar

After three years of full-time use, Robert D. Fairbanks from Haines, Alaska considers the WESMAR scanning sonar aboard his 36-foot (11 metre) *KNOTTY LADY* an invaluable tool for salmon gillnetting.

"With the WESMAR, I can find the fish," said Captain Fairbanks.

Last fall was not as good a season as Fairbanks had expected, but he used his WESMAR scanning sonar to make the best of it. Instead of guessing where the fish were, Fairbanks cruised the fishing grounds scanning for salmon.

The 360-degree sweep and tiltable transducer of the WESMAR sonar made it possible to search the total area beneath and around the *KNOTTY LADY*.

Only after he located the salmon on his WESMAR sonar, would Captain Fairbanks make a set. Knowing the location of the salmon improved the season for him.

According to Fairbanks, the WESMAR sonar is particularly effective in the shallow waters around Haines. "The WESMAR is

the only sonar I can accurately use in shallow water to get a good reading," he said.

This ability once helped Captain Fairbanks reach safety in foul weather. He was out when a 30-knot wind arose and buffeted him with 20-foot (6 metre) seas. Fairbanks said the WESMAR helped him pick his way through a difficult passage to find a secure cove where he waited out the storm.

Fairbanks purchased his WESMAR scanning sonar from Jørgensen Electronics in Wrangell, Alaska.

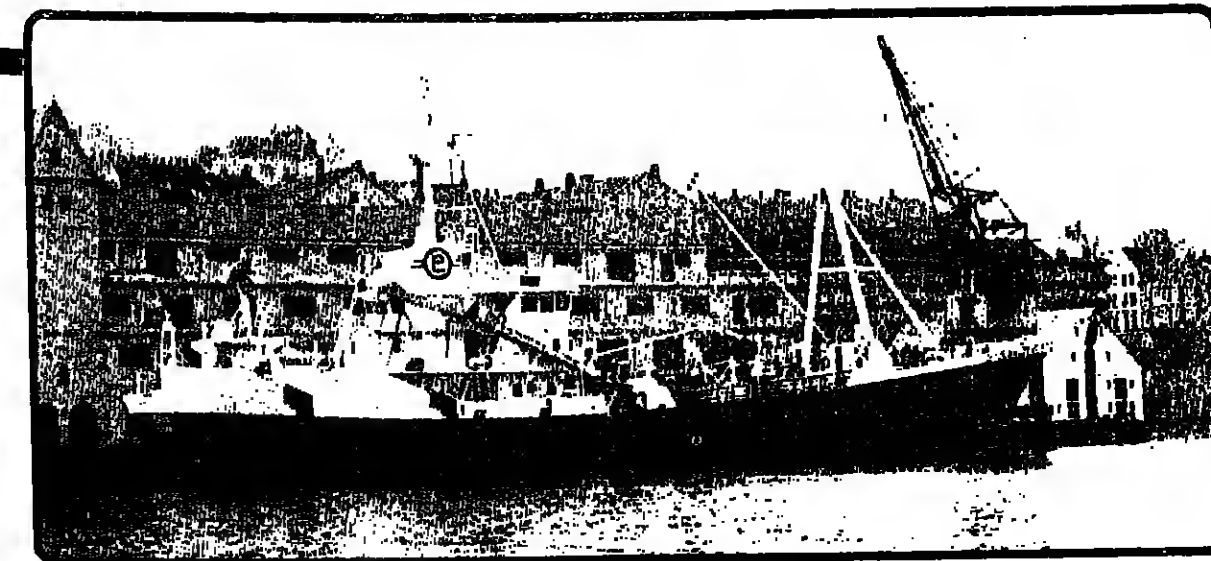


One of the many fishing fleets found in Alaska. According to Captain Haines, "The WESMAR is the only sonar I can accurately use in shallow water to get a good reading."

WITHOUT saying "I told you so," I am going to repeat the last paragraph on our April front page. But we have so many new readers that I must explain why.

In April we reported the introduction into the Norwegian purse seiner fleet of a new class of high-powered purse seiner/trawler. The vessels are able to work capelin in the northern winter and spring, switch to blue whiting for about two months in spring, move over if required in early summer to Canada for capelin, and then come back to Norwegian waters in August for summer capelin.

This is by no means the limit of the adaptability of these Norwegian "super-seiners." They could swing to mackerel, to any kind of bottom fish, or to herring should it again appear in its abundance of the 1960s.



The 'Libas' — largest and fastest ship in Norway's purse seiner fleet.

from the dockside

The ships we described included the 71.3 metre-long *Libas* and the 55.7 metre *Torbus*. The *Libas* (illustrated on this page) is the largest and fastest ship in the Norwegian fleet. She is powered by a 3000 hp Wichmann engine and has a speed of 17.5 knots.

The *Torbus* and several other impressive newcomers to Norway's fleet are all around the same size. She has a German Deutz engine of 3300 hp.

It is this choice of high power in a combination ship that once again reveals the innate fishing sense of Norwegian designers and vessel owners. First their research people probe the resource (as we describe in our article this month on the research ship *G. O. Sars*). Then they bring in a research and development project. And finally, all the information is turned over to the fishermen, builders and gear designers.

The result is a ship like the *Libas*. But, back to that paragraph in our April issue. This said: "For blue whiting all the signs point to a further big jump in catch this year. And the most prominent of these signs are the new super ships such as the *Torbus* and the *Libas*."

Well, as we noted briefly last month, the catch did jump. From 38,753 tons in 1977, it had reached a record 110,549 tons when the season closed early in June. And the top performers were — you guessed it — the big combination purse seiner trawlers.

Their landings were listed twice a week in the Norwegian newspaper *Fiskaren*.

Fishing off the Faroes, they were close enough to Norway to make several trips between the grounds and the fishmeal plants.

Unfortunately, Norway has yet to develop a local use for blue whiting but I would be

surprised if marketing leaders such as Leiv Birkeland of Frimor have not been watching what the British and Japanese have been trying to do at Sørnway.

Well up among the top ships was the *Libas*. From four trips during May, she landed 4,600 tons with a top landing of 1,600 tons. The *Torbus* landed nearly 3,700 tons.

The latest krill season

When we remember that this fish is believed to be abundant in the southern oceans (as pointed out as well as in the North Atlantic, we might venture to say that perhaps we are on the verge of another resource development on the scale of that of the Alaska pollock fishery.

But for another much publicised species it's all still in the future. Last month I did my regular yearly stint in Rome listening to the annual meeting of FAO's Committee on Fisheries. We shall report this in more detail next month but I did take particular note of what FAO and some member country administrators had to say about the latest krill season in the Antarctic.

FAO, most readers will recall, has published three excellent reports on Antarctic krill (see FNI, February and March 1978). These were highly praised by COTI delegates.

But the brief reports by countries actually engaged in krill development did little to support the statement by FAO's head of fisheries, Hermann Watzinger, that the situation in the Southern Ocean is developing very rapidly.

It could be, however, that he was referring to diplomatic moves to obtain agreement on levels of krill and other exploitation.

Here, things have been moving. From the meeting of Antarctic Treaty nations in Canberra earlier this year, and a subsequent meeting in Buenos Aires, it is expected that a Convention on the Conservation of Antarctic Living Marine Resources will be ready for signing at the end of 1978.

But what of the krill fishing? Reports for the 1977-78 Antarctic summer season indicate that the total catch may have been around 50,000 tons.

Japan, with 17 trawlers working at one time, was probably the biggest catcher, although we had no figures from the USSR.

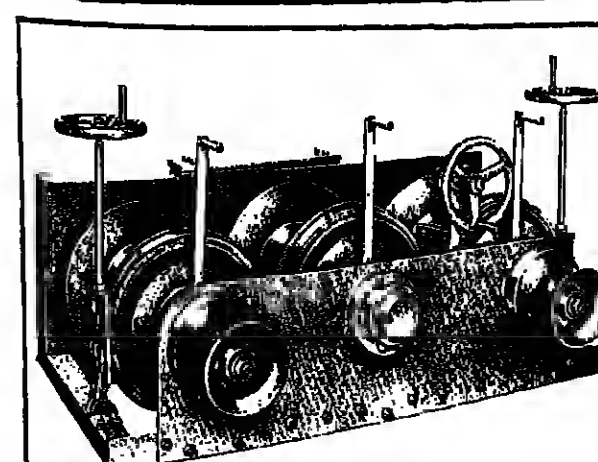
The Japanese land was estimated at about 26,000 tons. But, as the delegate from Japan quickly pointed out, even at this level the fishery is far from being commercially viable. "The grounds," he said, "are a long way from Japan and are in a severe environment."

He added that Japan was ready to provide FAO with data from its krill ventures and he called on all other countries involved in krill projects to co-operate in this exchange.

The delegate from South Korea put the view of a developing country when he urged that krill fishing should be open to all under suitable conservation controls. His country was planning to send a 3,000-ton research ship to the Antarctic later in the year.

West Germany, another krill investigator, also stressed that the resource is not yet at a commercial fishing stage. The two test ships sent south in the last season had come back with about 200 tons held from all the catches.

Peter Hjul



NORLAV

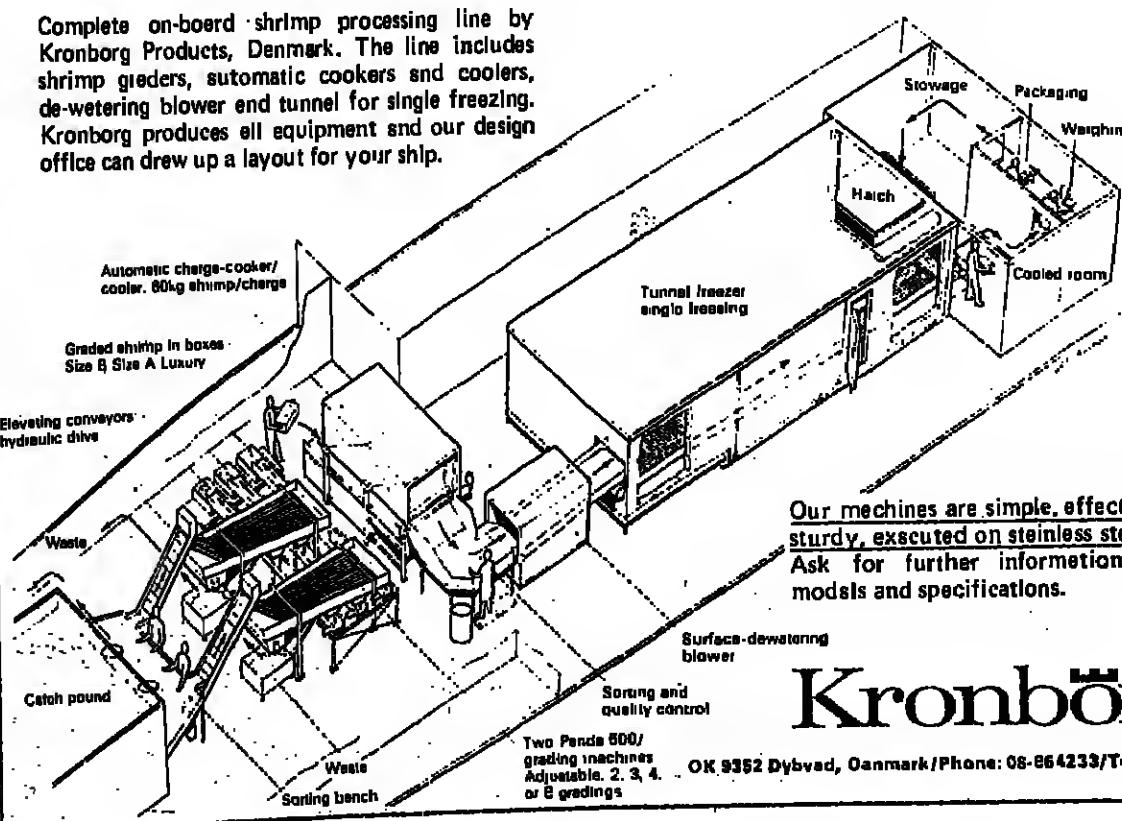
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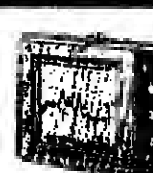
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Shallow	0-150 0-300
Medium	0-200 0-400
Deep	0-400 0-800

Depth	Fathom Meter
Shallow	0-200 0-380
Medium	0-400 0-600
Deep	0-600 0-1200

Depth	Fathom Meter
Shallow	0-50 0-150
Medium	0-240 0-480
Deep	0-480 0-960

Depth	Fathom Meter
Shallow	0-150 0-300
Medium	0-200 0-400
Deep	0-400 0-800

Depth	Fathom Meter
Shallow	0-30 0-40
Medium	0-40 0-80
Deep	0-80 0-160

Depth	Fathom Meter
Shallow	0-50 0-150
Medium	0-240 0-480
Deep	0-480 0-960

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With small, compact trawlers such as this vessel — the "Louro" — Pescanova SA became involved in a Southern African joint venture.

THE AFRICAN

Joint ventures keep Spanish trawlers fishing

AFRICAN COUNTRIES are strengthening their fishing links with Spain through a number of agreements intended to end fishing disputes and to assist both parties make the best uses of their resources.

By forming mixed companies with Spanish interests the Africans are thus getting a large part of their produce, learning the latest technology and using modern vessels. Spain, in turn, is able to continue fishing in many traditional areas.

The latest news of these developments was given to me by Miguel Maizra, director of the Spanish Association of Freezing Trawlers.

The first meeting of vessel owners in the mixed companies was held in November 1977. It was regarded as a success.

Although Spain had to make concessions, it was felt to be a useful way of resolving problems.

The main country involved in the Spanish-African joint ventures is probably Morocco. Firm proposals have been made for joint ventures backed by a considerable loan from Spain.

Although the agreement surprised some

owners, it does give them an opportunity to make full use of their vessels and to end the costly fishing dispute with Morocco.

One of the main conditions of the agreement is that, within five years of signing, half the fleet fishing for cephalopods within the Moroccan 200 mile limit will be under Moroccan control.

report by **ROBERT RICHARDS**

Other matters covered include landing of fresh fish at ports in the south of the Iberian Peninsula, limits between Morocco and the Canary Islands, and trawling limits for fresh and frozen fish.

Article III of the Co-operation Pact between the two governments allows for chartering of vessels from both countries by the mixed firms; it also says that they may use parts of either country.

Chartered

Under the pact, a mixed commission is to be formed to ensure that its conditions are met and that resources are conserved.

To carry on fishing in Moroccan waters, Spanish flag vessels will be chartered by Moroccan firms using their

own funds or funds from the mixed firms.

For catches in the Atlantic, the north of Cape Nouadhibou and the Mediterranean coast, Ring netting can be done only in the Mediterranean and off the Atlantic coast between Larache and Tangier.

Spanish ring netters will not be allowed to land sardines, but the Spanish loan will help in the construction of sardine processing plants. These will be run by joint venture firms.

It has been agreed that 40 per cent of the sardine fleet will come under Moroccan control in five years.

Although new factories will back the fleet, 80,000 tons of sardines will be landed annually in Spain during the first five years of the agreement. The nets permitted have to

be within 1,000 metres long and 130 metres deep.

The Spanish loan for strengthening the Moroccan fishing industry amounts to 1,525 million pesetas (about £24 million). Of this, 1,500 million pesetas is for industry infrastructure, 750m. for port installations, 150m. for a training college, and 1,125m. for building vessels in Spain for the Moroccan fleet.

There are also benefits for foreign investors in Morocco as there are no restrictions on the nationality of the investor for exporting enterprises. But when the sum involved exceeds 30 million dirhams (about £4m.) an agreement must be made with the state.

Cephalopods

For the Spanish industry, the main interest in Moroccan waters is cephalopod fishing using relatively small vessels and also in supplies of fresh fish to southern Spanish ports.

Both interests are well covered in the Pact. This is very important, because hundreds of boats are affected and will be allowed to go on fishing because of the co-operation between the two countries.

Mauritania is another African country which has been carrying on fishing talks with Spain.

She has signed an agreement by which the Spanish

government has provided credit equal to about U.S. \$23 million on easy terms to help finance imports of Spanish products.

The fishing pact with Mauritania will last four years. It will permit Spanish vessels to work off the coast of the African country on payment of a licence fee.

Another Spanish loan to an African country is \$200m. by the Banco Exterior de España to the Ivory Coast, although this is mainly outside fisheries.

Further south, the Vigo-based company Pescanova has been involved in a South African joint venture company called Sea Harvest Corporation since the 1960s. This company has a big freezing and freezing plant at Saldanha Bay, north of Cape Town. It runs its own fleet of trawlers, including several built in Spain.

Mozambique

Through Sea Harvest, Pescanova has also become involved in the development of the Mozambique shrimp industry.

Eight 23-metre trawlers, laid up after the collapse of an earlier shrimp venture, have been brought back into service by Pescanova Shipair Services, working in co-operation with the state fishing company in Mozambique.

... meanwhile EEC confusion continues

WHILE beginning to reach broad agreement with countries in Africa, Spain is having to pay heavily for her attempts to probe the fishing wall which the EEC is building around its waters.

EEC arrangements for fishing by licensing are proving as confusing for third countries as they are for EEC members.

The section of the Spanish industry worst hit is that working from ports on the north coast in the Basque provinces. The port of Ondarroa has the doubtful distinction of suffering the most arrests to its fleet. Its boats have been arrested on 60 occasions since the licence arrangements of 1977 and have paid fines totalling 56 million pesetas (nearly £385,000).

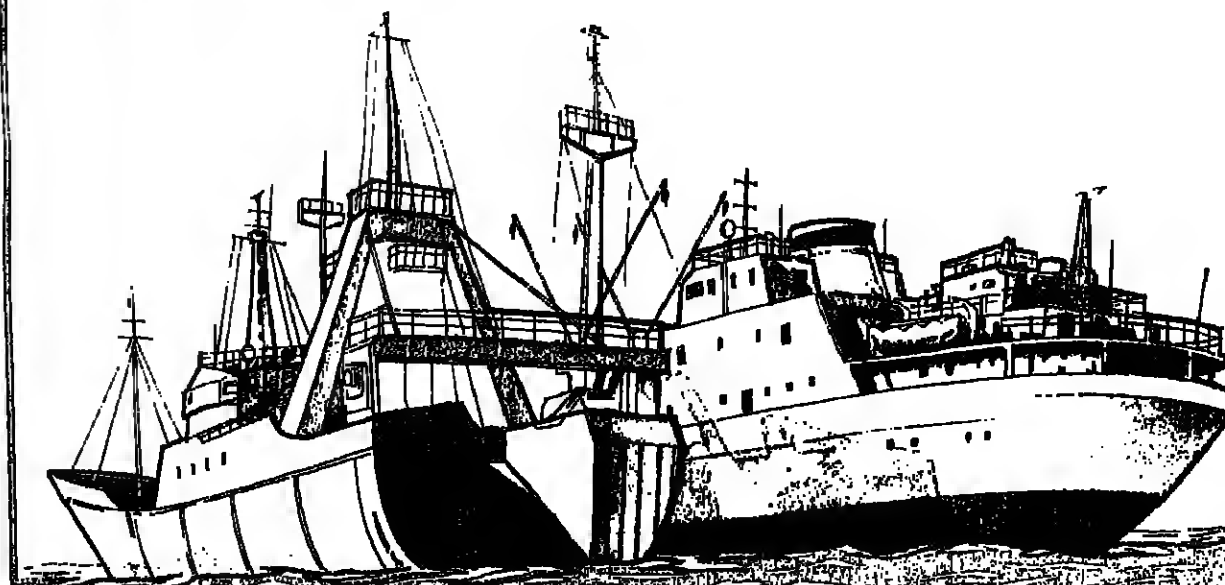
Although most of the arrests were by French patrols, some boats were detained by Britain and Ireland. Altogether 175 Spanish vessels had been arrested in European waters by the end of May.

The penalties varied. In France they have ranged between 200,000 and 600,000 pesetas. In Ireland they have been around 300,000 pias. But in Britain they have exceed two million pias.

CONNECTION

This Spanish distant water stern trawler is typical of vessels which have had to find fishing outlets through reciprocal agreements with African coastal states.

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VIETNAM SETS CATCH TARGET

THE Vietnam marine catch target for 1978 is 700,000 metric tons, with the bulk expected from fishermen in the south.

But targets were not met in 1977 and so people involved in the various fisheries attended a conference early this year to work out how the problems could be solved.

Participants in the meeting were aware of the slight decline in the southern catch, to 507,000 tons from 512,000 tons in 1976.

One decision was that boatowners and fishermen should be organised into collective groups immediately and into full co-ops by 1980.

Seychelles tuna project gets millions in aid

BRITAIN and France are helping, through their aid programmes, in a big tuna project in the Seychelles.

Britain's Ministry of Overseas Development's share will be £1.4 million. The money will be used for building and equipping a quay, freezer plant and cold store as part

of a £6.5 million fishing operation to be based on Victoria, capital of the Seychelles.

France's contribution will finance the cost of four tuna boats and the training of local fishery officers and fishermen.

The Ministry of Overseas Development says the project will

increase employment in the islands' fishing industry. The Seychelles has a land area of only 170 square miles. Apart from tourism, the sea is the only major resource.

The project is intended to begin the exploitation of both deep and shallow sea fish resources which are beyond the scope of present small-scale operations.

In 1975 the Seychelles government set up a Fisheries Division. Since then British aid has financed surveys by consultants on available fish resources and on the shape of a first-stage tuna industry. The present project arises from the tuna survey.

Skipjack

The aim of the scheme is that deep-sea fish, mostly skipjack, will be frozen and the catches transferred to cold storage in Port Victoria, then exported to canneries by refrigerated cargo ship.

Initially, 4,000 tons of fish a year will be produced, but it is hoped that output will be increased eventually to 15,000 tons.

"In this way," says the ODM, "the project would be a focus-point for a major expansion in deep and shallow water fishing in the islands."

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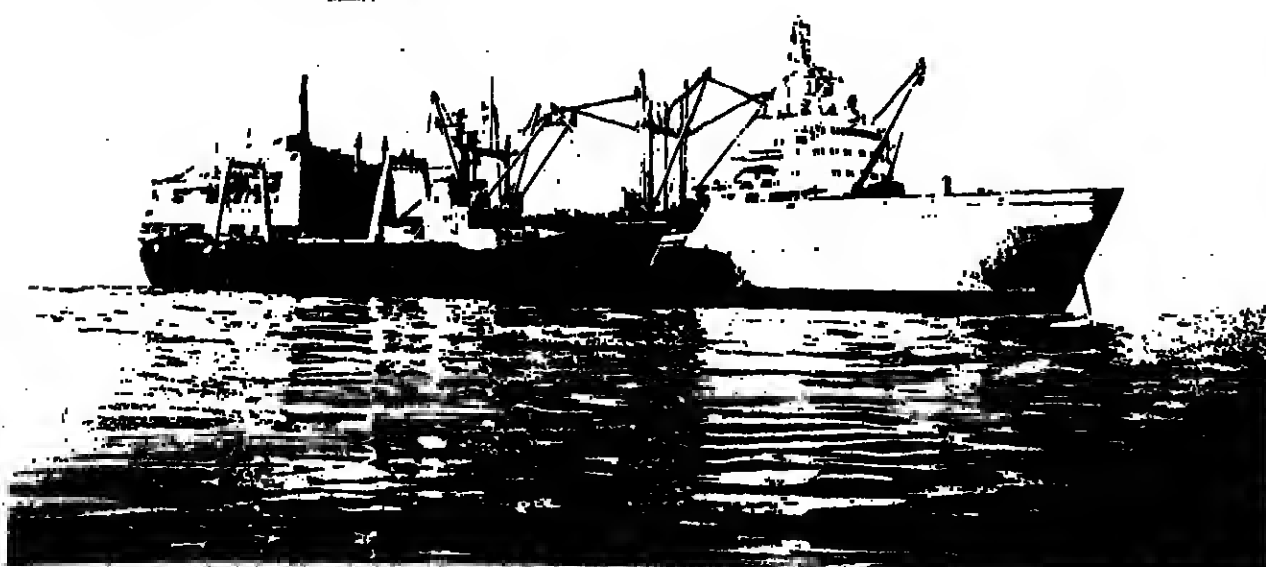
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News in brief

A DUTCH firm is investing US\$40 million in a joint venture in Uruguay. Most of the money will be spent on new vessels. A Swiss bank has granted Inape the National Fishing Institute a loan of \$28 million to buy trawlers from shipyards in South Africa.

THE Japanese company Nippon Suisan Kaisha is reported to be interested in investing in the fisheries sector of the Rio Bio region of Chile. The main ports there are San Vicente and Talcahuano. Six representatives of Nippon Suisan visited the region at the end of May to examine ports and fisheries.

TRONDUR, the Norwegian frozen fish organisation, has contract with Cameroon in West Africa for 700 metric tons of blue whiting, 300 tons of mackerel and 20 tons of capelin.

GHANA and South Korea have been discussing a bilateral fishing agreement. This will provide the South Korean fleet with catch quotas off Ghana's coast and use of Ghanaian ports as advance bases. Some 30 South Korean vessels are working off Ghana.

A YUGOSLAV firm is to build a large fishing port at Misurata, in Libya. Work is to start this year. Other fishing ports are planned for Abu Khamish, Mersa Sabat, Zawayq, Mersa Zuwayha and Tobruk.

Japan fleet can stay— at a price

JAPANESE vessels are being allowed to fish under strict controls in certain parts of the Papua-New Guinea 200-mile limit. They have had to pay about £850,000 for the privilege. Papua-New Guinea began enforcing its new economic zone regulations from the beginning of April.

In a subsequent agreement, the Japanese can continue fishing for a total ship licensing fee equal to 258 million yen for nine months until the end of January 1979.

Closed area

A large area in the Torres Strait and in Papua-New Guinea territorial waters is closed to Japanese vessels. But they are permitted under the agreement to call at the ports of Rabaul, Kavieng and Madang as well as Port Moresby.

The two governments are to work out a formal fishing agreement by the end of October.

In 1976 Japanese vessels caught 3,300 tons of tuna and 9,650 tons of bonito.

Shrimpers and supertrawlers

EXPORT construction at opposite ends of the size scale in Poland includes the super trawler *Sprut* for the Soviet Union and the first KR-24 type shrimp trawler in order from Nigeria.

The *Sprut*, building at the Northern Shipyard in Gdansk, is the first of five giant B-400 class factory trawlers whose design was unveiled during the 1975 Larybrom exhibition in Leningrad.

She is 119.5 metres long overall with

a deadweight capacity of 3,600 tons. Her propulsion plant consists of two 3,600 hp engines.

Ships of this type and power can trawl in very deep waters. The *Sprut* has a huge split winch, electrically powered from one of two 2,000 kVA generators driven from shaft reduction gear. Each drum can take nearly 5,000 metres of 32.5mm diameter warp and exerts a pull of 20 tons at 120 m/min.

The *Sprut* has completed trials in the Baltic. She was expected to start

extended trials in the Atlantic in June to test her deepwater gear.

The shrimpers are being built by the Wisla yard in Gdansk. They are 23 metres long with a beam of 7m, and estimated draught of 2.8m. Each will have a 425 hp main engine giving a speed of nine knots.

The KR-24 trawlers have freezing plant and refrigerated holds. Each is designed to handle four tons of shrimp and fish in 24 hours.

They have a crew of 12 and can stay at sea for periods of up to 40 days.

SRI LANKA PRESIDENT HEADS PRICES PROBE

PRESIDENT Junius R. Jayawardene is personally heading a top-level ministerial committee to examine production, supply and distribution of fish in Sri Lanka.

Other members of the committee include the Prime Minister and the Ministers of Fishing; of Agriculture and Lands; and of Food and Cooperatives and Trade.

The composition of the committee, writes *FNI* correspondent Nalin Wijesekera, reflects the government's serious concern over high fish prices and over the scarcity that threatens to force prices even higher. At Colombo's big St. John's market, prices have soared in recent months. Horse mackerel, which was Rs.6 a lb., jumped to Rs.12.5; Spanish mackerel rose from Rs.9.5 to Rs.21.5; dog shark from Rs.3.5 to Rs.6; and shrimp from Rs.3.5 to Rs.12.

The price problem in markets outside Colombo is even more serious.

The familiar scapegoat, the middleman, is partly blamed for the shortage and the high prices. It is alleged that he is paying fishermen a fraction of his own price.

But even these prices, it seems, are better and are paid more promptly, than those of the Ceylon Fisheries Corporation.

Another reason given for the marketing difficulties is a shortage of ice and refrigeration space.

"The fish business is not like any other," said a St. John's vendor. "We sell a very perishable commodity and if we cannot get the ice to preserve the fish for another day we could be ruined."

Break even

"So when we can't get enough ice we have to buy a smaller amount of fish and sell it for a higher price to break even."

However, an official of the Fisheries Corporation denied there was an ice shortage. "If fishermen want ice," he said, "the Corporation is prepared to supply them."

Also blamed is the spiralling cost of living with rising prices of many other foods. But Edgar Fernando, Director of Development at the Ministry of Fisheries, brings the real problem back to the fishing industry. The main reason for the short supply, he says, is a static yearly harvest of around 130,000 tons. Ninety per cent of this comes from catching within 24 miles of the shore, and it provides barely 60 per cent of the country's fish requirements.

MONTE CARLO CONFERENCE

REPRESENTATIVES from more than 75 seafood companies and allied organisations in 16 countries have registered for the first annual International Seafood Conference in Monte Carlo from November 12 to 15.

Prince Rainier of Monte Carlo has given the sponsors a patronage. The sponsors are grateful that he will personally welcome the conference, since oceanography is one of his interests.

Ghana tuna boat deal in doubt

A 240-MILLION kroner (£24.5 million) contract to build eight tuna purse seiners for Mankoudze Fisheries Ltd. of Ghana will probably fall through, says the company's Norway agent, Hallbjørn Hareide.

The Norwegian aid organisation, NORAD, has to agree that the project falls within the scope of aid schemes to assist developing countries. But it has been examining the plans and is not convinced.

According to Hareide, NORAD doubts the potential profitability claimed to be based on an estimated 4,000 tons of tuna a year for the 55-metre vessels. It estimates the catch at around 2,500 tons.

It was Mankoudze's American customer, Starkist Foods Inc., who considered that the 55-metre tuna purse seiner would have the best potential. NORAD recommended a 45-metre vessel.

Meanwhile, a German ship-builder is reported to have made Mankoudze an offer.

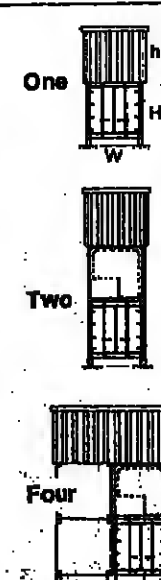


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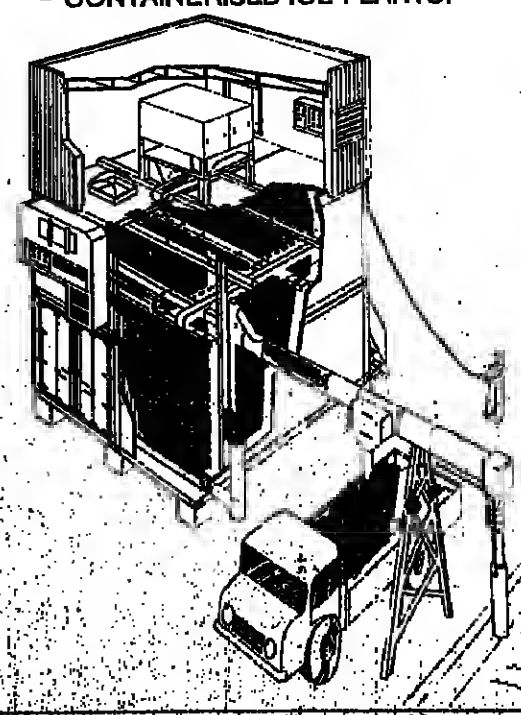
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COMPENSATION for the loss of pilchards — a boatload of anchovy at a Welvis Bay factory.

PILCHARD

Report from

THE GLOOM at the opening of the South West African pelagic fishing season has been partly relieved by an abundance of anchovy, reports FNI correspondent Michael Stuttaford. But pilchards remain desperately scarce.

From the start of the season on March 26, pilchards have been found in the far north — an unprecedented 30 hours from the jetties at Walvis Bay.

Limited catches have been made: a mere 20,500 tons against last year's 69,000 tons and 250,000 tons in 1975 and 1976. These figures are for the first two months of the season.

The landings were largely influenced by restrictions. Because of the peculiar political situation in the country, a final decision on

this year's quotas had not been announced by early June. It was expected, however, that the ICSEAF guideline of 125,000 tons of pilchards for the local industry would be adhered to.

This level compares with around 500,000 tons of recent years and 1.5 million tons by the shore-based industry and factory ships in 1968.

It is feared that conservation efforts on behalf of the SWA pilchard are being negated by foreign mid-water trawlers, most of whom were excluded from South African waters on November 1 last year when that country implemented a 200-mile exclusive fishing zone.

Fears that foreign ships are taking a toll...

Meanwhile, in compliance with ICSEAF recommendations, the local industry was concentrating on extensive shoals of anchovy found from six hours south of Walvis Bay to eight hours north.

The most heartening aspect of the season has been the high body oil yields recorded from both anchovy and pilchards. Anchovy have come in at an unprecedented average of eight per cent while some factories have obtained a phenomenal ten. Although the oil content of pilchards was not as high as it has been in the past, it is substantially improved over recent years.

This, factor indicates that conditions in the environment are not as adverse as they have been for the past three or four years. The industry hopes that, as a result, egg and larval survival will be good this year and thus contribute to a recovery in the pilchard stocks.

Quotas agreed

There appears to be an enormous foreign effort in South West African waters despite ICSEAF quotas for hake and pilchards being agreed upon at Tenerife in December last year.

Local purse seiners report large numbers of foreign trawlers working among the pilchard shoals. If this is true, ICSEAF recommendations must have been exceeded by a large margin by early June.

WHY EEC SPELLS Catch can

THE GROWING demand for food and the 200-mile exclusive economic zones which permit countries to control wide fishing areas off their shores. These zones would also diversify fish production from a few predominant countries to many and give rise to a variety of business arrangements between coastal countries, investors and fishing firms.

The 200-mile zone is already applied by 63 countries and is likely to be brought in by many of the remaining 64 coastal states.

"The day of the big trawler hunting the world for fish is almost over," Mr. Appleyard told the meeting of national development bank executives. He added that these big ships would need to be replaced by shorter range or regional fleet.

are created, many small-scale flags of developing countries will be created. But, while these countries now have some fishing vessels

encouraged by the 200-mile exclusive economic zones which permit countries to control wide fishing areas off their shores. These zones would also diversify fish production from a few predominant countries to many and give rise to a variety of business arrangements between coastal countries, investors and fishing firms.

The 200-mile zone is already applied by 63 countries and is likely to be brought in by many of the remaining 64 coastal states.

Southern Africa

PILLAGE!

But further south the pelagic fishing's good

SOUTH AFRICAN pelagic fishermen are having an excellent season. The season opened on January 1 and continues to August 31. But by early June five quotas had been filled and the rest were nearly full.

Fishing started on pilchards south-east of Cape Town and some 70,000 tons were landed.

During March and April the 100-strong fleet found red eye ground herring off the west coast and landed some 30,000 tons.

Then, at the end of April and through May, anchovy appeared in large shoals along the west and south coasts. Some 130,000 tons were landed by April.

Hopeful

While some red eye was canned for pet food, the factories were still hopeful of finding mackerel. But, as the quotas filled, the fish spotting aircraft could find no sign of the species.

In 1972 the industry processed 70,000 tons in two hectic weeks during June. It is feared in that and the following year, foreign mid-water trawlers made terrible inroads into the mackerel. They were seen working in mackerel waters well offshore and the local industry is yet to enjoy a harvest similar to that of 1972 despite wide ranging searches for the species throughout the season.

Distance

Pilchards were not canned this year because they were caught a long distance from the canneries at Saldanha Bay and St. Helena Bay. To make better use of the fish found within a few hours of its jetty, Gansbaai Marine, the southern-most factory, is installing a cannery.

OPPORTUNITY be doubled

the tapped and untapped fish stocks, they still lack the capital and the expertise to make full use of them. This is already leading to a number of fishery development approaches.

Some countries are creating parasitist fleets. Others are encouraging private investment. Still others, such as India, are inviting foreign investors to participate in joint ventures. Some countries may opt to licence traditional fishing firms.

Dangers

In regions such as Central America, where many countries have overlapping fishing grounds, a regional arrangement could be advantageous.

As always, Mr. Appleyard warned, the oceans will hold as many dangers for unwary investors as for mariners. He noted that over-

enthusiasm or lack of careful research into development schemes had led to failures and had given the fishing business a reputation as a high-risk investment.

But FAO and other research, and international organisations had made great progress in studying fish resources and laying the groundwork for successful approaches to fisheries promotion.

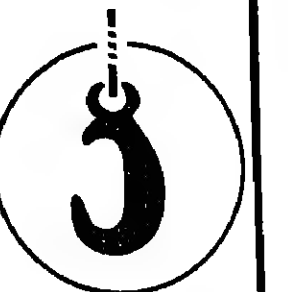
Profitable investments, he indicated, can also be made in projects assisting small-scale fishermen.

The FAO Bankers Programme is preparing five fisheries projects with member banks, including one to expand a small port, build eight 18-metre boats and train fishermen on Sao Nicolau Island, Cape Verde. The project will increase the catch of sardines and tuna, adding to local food supplies and earning needed foreign exchange.



FISH but little work for the packing lines. Cannery row at Welvis Bay.

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- windlasses for 15 to 130 mm dia. anchor chain
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- self-tensioning mooring winches 3 - 30 tons
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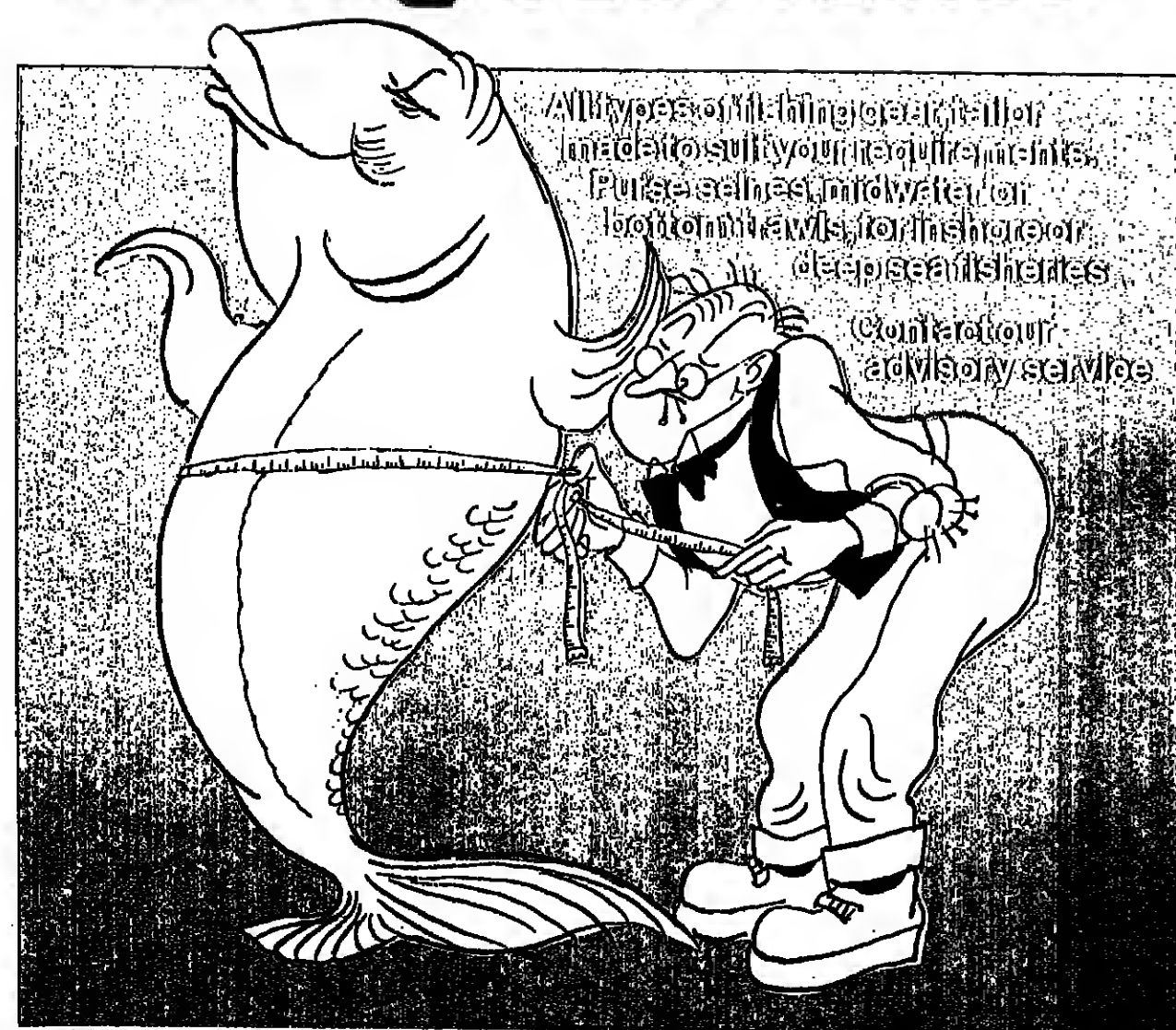
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Busy five days of

CATCH '78

ORDERS for fishing boats, machinery and other equipment worth several millions are reported to have been placed during the five days of the Catch 78 exhibition in Aberdeen, Scotland, last month. It closed on Sunday, June 18, with the news of the placing of a £750,000 boat order by one of Scotland's top seine net fishermen.

When the exhibition opened on Wednesday, June 14, the 185 standholders had filled all available space in the two large temporary structures erected on the Queen's Links site.

It amply met the claim of the organisers, Eagle Exhibitions, that it was going to be the largest-ever Scottish fishery show.

Firms taking part and the visitors gave it a strong international character. But it was also a good Scottish occasion, with fishermen and processors attending from all parts of the country.

Attendance on the first day was nearly 4,000. By the close on Sunday some 30,000 visitors had seen the huge range of exhibits.

Earlier in the week the McLay Marine yard on Merseyside had finalised a £500,000 order from another seine net skipper, Donald Anderson of Peterhead. This steel-hulled vessel will be powered by a Mirrelec-Blackstone engine, as will the other seine netter which has been ordered from Campbelltown.

This 86 ft. (26.2 metre) boat will be for Skipper Norrie Bremner of Wick.

With Scottish owners moving from wood to steel in the larger sizes, business at the exhibition and interest around the stands revealed a coming shift at the middle size levels from wood to GRP.

According to our associate *Fishing News*, a contest is looking for orders in the 50 ft. (15.25 metre) range. One firm announced plans to launch a 55 ft. hull next year, and Halmatic reported renewed interest in its 54 ft. design.

Exports

Steel boats in the smaller range are also attracting attention, particularly those available in series at competitive prices. At Catch 78, Hull Steel Craft had details of its basic but very cheap range, and Avon-Hemel Marine had reason to expect export orders.

Spending at the exhibition was by no means confined to boats. Equipment suppliers reported brisk business on all of the five days.

On day-one Marconi

Aberdeen

show

attracted

30,000

visitors

went

millions

in orders

for boats

and gear

Marine reported sales of 12 of its new Chronoscope K colour display echo sounders (see FNI June 1978) and four net monitors, worth a total of £110,000.

Autoline

Also reporting brisk business was the Norwegian firm Mustad with its Autoline system, which aroused considerable interest among fishermen seeking to diversify their activities and spread them through the year.

Another maker of lining



A rare quiet moment on our usually busy stand at Catch '78. George Johnson of Marconi Marine catches up on world-wide events in the industry through the latest *Fishing News International*.

equipment. Transatlantic Fishing Systems of Cornwall took orders worth £20,000. The firm expects at least another £40,000 from enquiries at the stand.

Back to electronics, Krupp Atlas Elektronik took a last £45,000 in sales on the Sunday to end the show with nearly £250,000 worth of business and a further £150,000 likely from enquiries.

All-out

Encouraged by the success of Catch 78, Desmond Corcoran, head of Eagle Exhibitions, says his company is now going all-out with its largest fishery venture to date — the Eurocatch exhibition in Olympia, London, from June 27 to July 1 next year.

"We have had a big response," he told FNI, "and have already had to apply for more space at Olympia."

This 27 ft. GRP boat outside Catch '78 has been newly introduced by Aquarius Marine of Portleven in Cornwall. The boat without engine sells for £7,500.

Autoline goes Scottish

AN INTERESTING feature of the new 86 ft. (26.2 metre) boat ordered by Skipper Norrie Bremner from the Campbelltown Shipyard is that she will be designed to fit a Mustad Autoline system which will extend her fishing capabilities.

In addition to seine netting and trawling, the vessel will be able to take advantage of long lining opportunities inside Britain's 200-mile limits.

Skipper Bremner, who will pay about £750,000 for his boat, is one of the top seine net fishermen in the UK.

Back up

Like most Scottish large boat fishermen, Skipper Bremner is new to long lining. He regards his 25,000-hook Autoline, which he is buying for about £70,000, as a back-up in case there is a boo on working in Norwegian waters.

"Around 30 or 40 Norwegian liners are operating off the north-west coast of Scotland," said skipper Bremner. "If we have to get out of each other's waters, then I will take their place."

The new boat will be delivered in the first half of 1979 and will eventually be taken over by Norrie Bremner's son Andrew.

The main engine will be a Mirrelec-Blackstone diesel developing 670 hp.

DAY-TWO of the exhibition proved fruitful for Poyaud Diesel Engines of France. The company sold a six-cylinder 200 hp, 1500 rpm engine for a 55 ft. seiner/trawler named the *Golden Spinner*.

Owned by Mr. G. Cowie of Rothesay, she will fish in the Clyde and West Coast area.

The sale was arranged through Poyaud's distributors for West Scotland, Ardnaish Boat Building Co. Ltd., of Ardnaish, Isle of Bute.

The complete deal is valued at around £30,000.

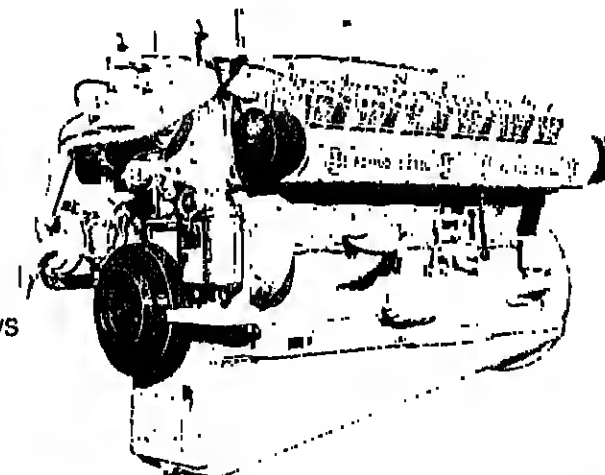
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1. Trawler - POYAUD main engine type A 12150 SrM - 600 hp
2. 3. 4. Trawlers with POYAUD main engines type A 12150 M - 440 hp each
5. 6. Tuna purse seiners
 - 1 - 2200 hp SACM main engine type G 12 VS
 - 2 - 340 kVA POYAUD electric power generating sets type A 12150
 - 3 - 220 hp POYAUD type 520 V 8 NS work-boat propulsion engine



Photos: SACM - STUDIO LEROUX - STUDIO LEROUX - NEW COMET

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Fish row —
America
to blame

TROLLERS who fish the waters off the west coast of North America blame the United States government for a dispute which in June saw US fishermen banned from Canadian waters and Canadians banned from US waters.

The dispute erupted, when Canada took a tough stand during negotiations and announced she would ban US commercial fishermen from her 200-mile economic zone on both coasts. The United States countered by banning Canadian fishermen.

Responsible

Delegates attending the International Salmon Trollers Conference held in Vancouver, British Columbia, in June asserted that the United States was responsible for the situation. They say she attempted to impose jurisdiction over Canadian fishermen even though they had traditionally fished in the US economic zone.

One of the problems in coming to an understanding between the two nations is that while fisheries in Canada are under federal jurisdiction, fisheries in the United States are under both federal and state jurisdictions — and the federal negotiators and state negotiators do not always agree.

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HE-10700	2½:1, 3:1, 3½:1, 4:1		
HY-22000	1:1, 1½:1, 2:1	Cummins VTA-903M, Detroit Diesel 8V-92 Mercedes OM403-404, Scania DSI 14	
HY-6900	1½:1, 2:1, 2½:1, 3:1**		
HY-7700	3:1, 4:1, 4½:1	Allis Chalmers 25000 Caterpillar D343, 340B, 340B Cummins NTA855M, KT-1150M Detroit Diesel 8V71, 8V92, 12V71	Rolls Royce C6M-310, C8M-410 Scania DSI-11, DSI-14 Volvo TAMD120A Waukesha H866DSIM, F674DSIM
HY-28000	4½:1, 5:1, 6:1		
HP-8900	1½:1, 2:1	Detroit Diesel 12V71T1*	Caterpillar 3412TA Cummins VT1710M, KTA1150M Detroit Diesel 16V71 Rolls Royce, DV8NM, DV8TM
HP-7700	3:1, 4:1		
HP-28000	4½:1, 5:1, 6:1		
HPV-9400 HPI-9400	1:1, 1½:1, 2:1, 3:1	Caterpillar D353TA Cummins VTA1710M, KT2300M Detroit Diesel 16V-92, 12V-149 Rolls Royce DV8TCWM Waukesha F2896-DM	
HPV-10500 HPI-10500	4:1, 5:1, 6:1		

*For Pleasure Craft Only **Anti-engine rotation output only.

Direct Drive Reverse

5HD-200	1:1 In-line	Cummins VT903, N855M, Scania D14, Caterpillar 330B, Volvo TMD-100A, Detroit Diesel 8V-71, Rolls Royce C8M265
HY-400	1:1 In-line	Detroit Diesel 8V92, 12V71, Scania DSI-14, Cummins VTA-903M, NTA 855M, KT1150M, Caterpillar 340B, Rolls Royce C8M410
HP-500	1:1 In-line	Detroit Diesel 12V71T1 Caterpillar 3412TA Cummins KTA1150M
HR-200	1:1 In-line	Caterpillar D398, D399 Waukesha F2896DSIM

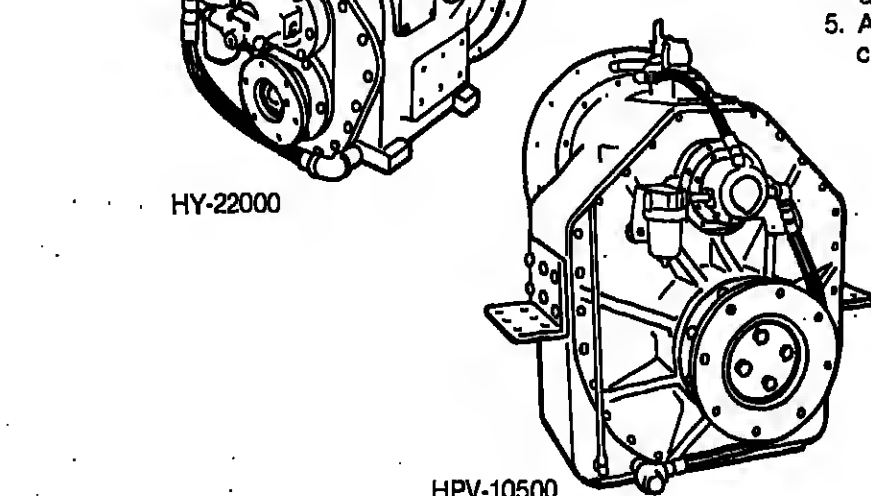
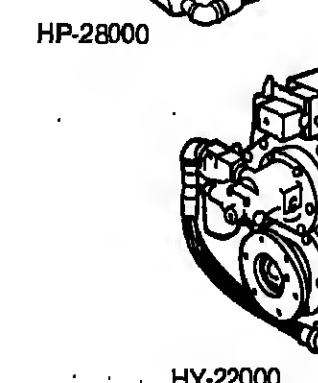
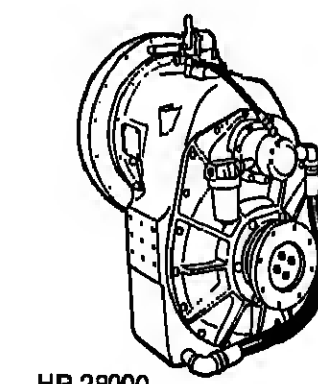
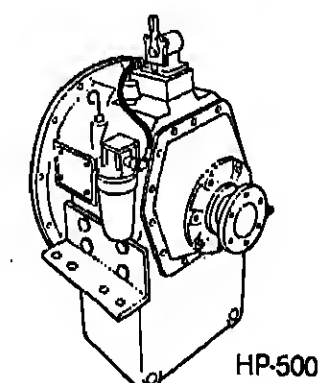
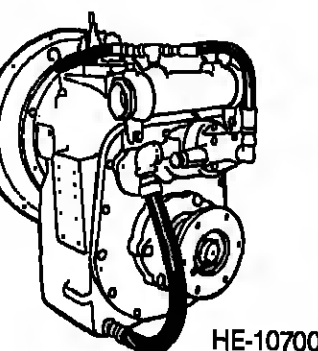
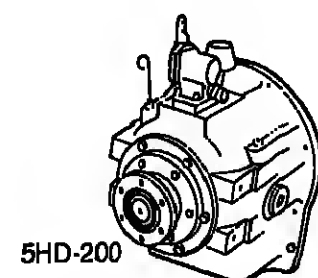
- Notes: 1. Consult factory or authorized distributor on specific applications. This chart is intended as a guide only.
2. Anti-engine rotation output normal for reverse and reduction units. Available with Idler for engine rotation output (except**).
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New engine and a winch from Belgium...

DOUBLED POWER DIESEL UNVEILED

BUSINESS and technical journalists from four countries were given an insight last month into the meticulous planning, engineering and testing that precedes the introduction of a new engine. The occasion was a visit to the Anglo Belgian Company in Gent which recently announced the first of its new DZ range of diesels.

As engine makers go, ABC is small. It is still a family business and the unveiling of a new engine excites everyone who has taken part.

Although the factory employs only about 250, it is modern by any standards with some of the latest precision machine tools available.

"Over the last four years," said sales director Jean van der Hegen, "we have invested the equivalent of about £2 million in updating the manufacturing equipment, and developing an advanced design of engine."

ABC is already well into the market for fishing vessel engines with its present range. The DZ will open the way to the higher-powered fishing ships, deeper trawlers and purse seiners.

In its initial six-cylinder form the engine delivers 1803 hp at 1800 rpm. The engine will be offered in pressure-charged/inter-cooled form as standard.

An eight-cylinder version is also being developed and is expected to be available around the end of 1978.

"In developing the new range," explained ABC, "we were careful to design within conservative parameters aiming for quiet operation, low fuel and lube oil consumption, and superlative reliability."

It claims that in the DZ it has achieved a "most economical engine." The

specific consumption figure is 158 g/bhp/h between 50 and 100 per cent load. This is an "in service" figure.

The concept of the DZ was an engine with twice the specific output of the DX, pointing to a power output of

300 hp per cylinder with a bmep of 16.9 kg/sq.cm.

Piston speed is limited to 10.32 m/s, which ABC regards as one of several important factors contributing to reliability. Another is to minimise the number of cylinders.

The DZ keeps six for the basic model although the bore is increased to 256 mm. Stroke is 310 mm, giving stroke/bore ratio of 1.21. ABC claims that its DZ is the lowest priced engine per hp of its type.

Skipper well pleased



AS REPORTED briefly in FNI in June, the new 54.2 metre long West German stern trawler *Sonne* has been equipped with net drum and main and auxiliary winches by the Brussels Marine Industries N.V. of Nieuwpoort.

Returning from his first fishing voyage, the Nordstern trawler's skipper has said that he is well-pleased with the deck machinery.

He was probably already familiar with the winches: Brussels has supplied most of the large West German stern trawlers.

For this 2400 hp economy-class vessel, the choice was an electrically driven six-drum trawl winch (pictured above) with a capacity of 3000 metres of 3.5 lb. cable, wire on each of the main drums. The drive is by 380 hp motor and the nominal pull on the main drum winding is 16 tons at 95 m/min.

Remote controlled

All six drums are pneumatically remote controlled from the bridge. All actions for braking and clutching are centralised with fingertip levers and synoptic position lights.

Also included is a pair of warp tension meters with pressure gauges and recorder.

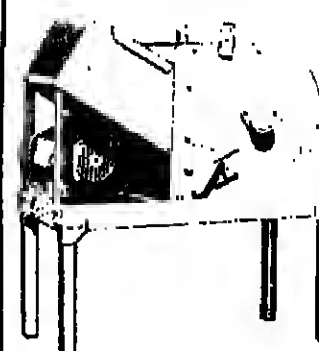
Main drums are fitted with the Brussels patented automatic rope guides as standard.

Operating the drum clutches has been simplified by combining main and warp clutches. This means a single action for main drum in-bright/draw out or vice versa, with neutral position for decoupling both drums together.

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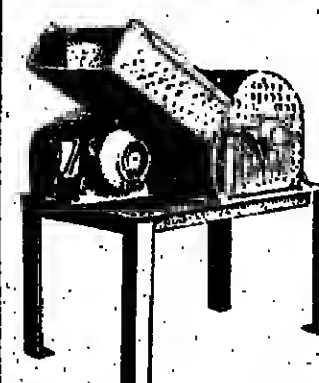
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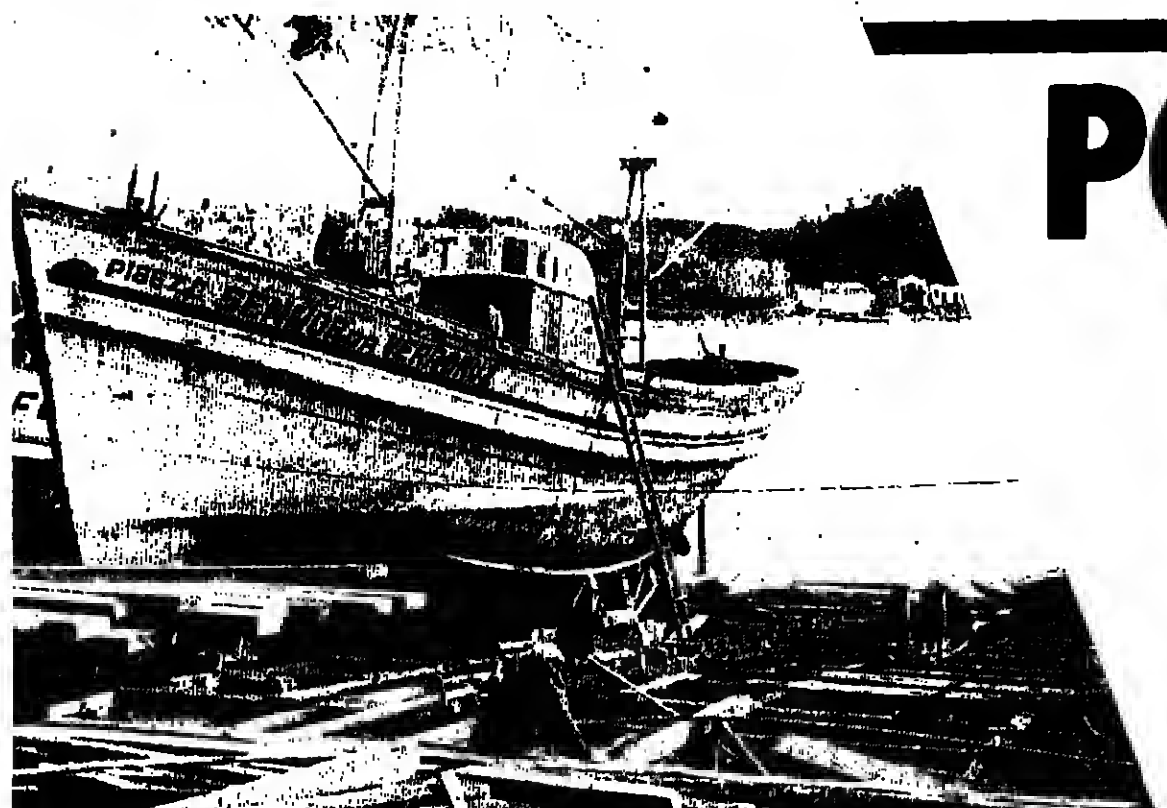
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ALTHOUGH it has modern boats and the latest methods, much of the industry is carried out by small wooden boats. Many, like this, are in need of renovation.

PORTUGAL

ONCE ONE of the great traditional fishing nations of Western Europe, Portugal has seen her industry decline and her fishermen struggle to make a living. Part of this has been due to factors common to most traditional fishery industries — dwindling resources through over fishing, changing demands and the effects on distant water fleets of limits extensions.

But Portuguese fishermen suffered the additional handicap of poor organisation of their industry, mismanagement and corruption. Much of this was noted in *FNI* in a special feature prepared just before the revolution of April, 1974.

Since then, fishing has had to take a back place to other urgent social and economic reforms. But its turn is coming and, as we report briefly here, it will soon be assisted by a comprehensive improvement and development programme.

THE LATEST economic policy statement by the Portuguese government gives special attention to the country's fishing industry. The Programa Economico e Financeiro recognises the importance of the industry, which it says needs to be put in order to augment falling catches and to cut rising imports of fish products.

Two main objectives are set out in the fishing section of the plan:

1: A progressive increase in catches to cover national demand for all types of fish and fish products to save the currency drain on imports.
2: Development of fish product exports, particularly canned fish and fish oils.

Long-term plan

The government intends to produce a long-term Fishing Development Plan, reports *FNI* correspondent Robert Richards, which will review existing conditions, look at what is needed and then work out investment and all other factors involved.

Research for the Plan will require an extensive study of the fishing potential around the Portuguese coast. The 200-mile economic zone will be reserved for Portuguese vessels, or for those of countries involved in special agreements with Portugal.

An urgent need is the presentation of various prototypes of fishing vessels which can be used by Portuguese crews in the fishing drive. Also urgent is the determination of possible catches within the 200-mile zone, and a future plan for the wider fishing area.

Pattern

Parliament is to be asked to approve a series of tax benefits to allow importation of vessels which will serve as a pattern for the renovation of the country's fleet. Many Portuguese vessels, it is recognised, are outdated and badly in need of repairs and modifications. Technical and financial aid will be given to small and medium size firms, especially co-operatives of small-scale fishermen.

The Plan will pay special attention to wages and working conditions, seeking to improve them along with productivity and to help create new jobs.

Fishing in Portugal is the responsibility of the Secretaria de Estado dos Pesca and the government department is to be completely reorganised.

New legislation will provide for increases in cold storage space and in transport. It will enable chartering of foreign vessels, and it will give the government power to protect national waters within the 200-mile zone.

There will be special help for small-scale or artisanal fishermen, which will include various aids and incentives.

Big plans to boost fishing

KEY POINTS FOR A NEW LONG TERM DRIVE...

introduction of new boats and equipment, training and education and credits.

On the fleet side, a new sardine fleet is planned, using modern boats and the best available equipment, and an appeal will be made to develop an ocean-going tuna fleet, either with Portuguese-owned ships or with chartered foreign ships, which would expand catching in the areas around Madeira and the Azores.

A plan for trawling will be prepared, concentrating on the opportunities inside the 200-mile zone, and the existing trawler fleet will be modified so that it is suited to the change in fishing opportunities. The cod fleet will be reduced and adapted for other uses.

Fish farming will also be explored in all its possibilities both by government bodies and by private enterprise.

Farming

To provide the necessary research and development input for all the development projects, efforts will be made to improve and strengthen the state research organisations.

The Instituto Portugues de Conservas de Peixe will be encouraged to assist the canning industry and special attention will also be given to reducing imports of fish meal and oil which, at present, amount to about 20,000 tons a year.

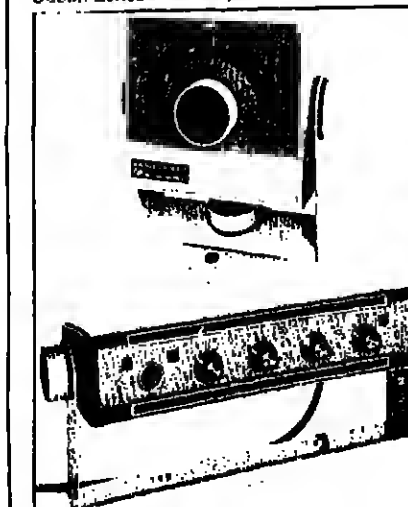
Another need is for an efficient distribution network for fish. The government is to concentrate on this with efforts to improve the cold chain from catching vessel, through market cold stores, to retailers and the consumer.

TOP: Boats under repair near Oporto and (above) the port of Matosinhos, in northern Portugal, a great centre of the sardine canning industry.

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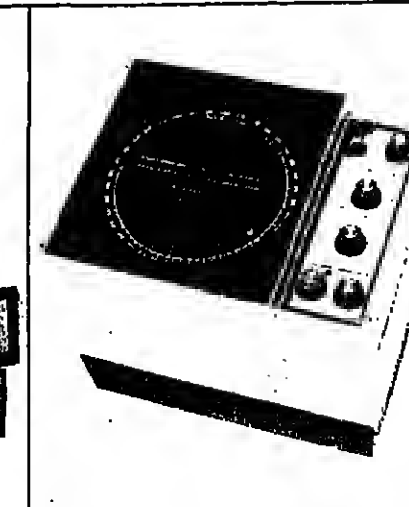
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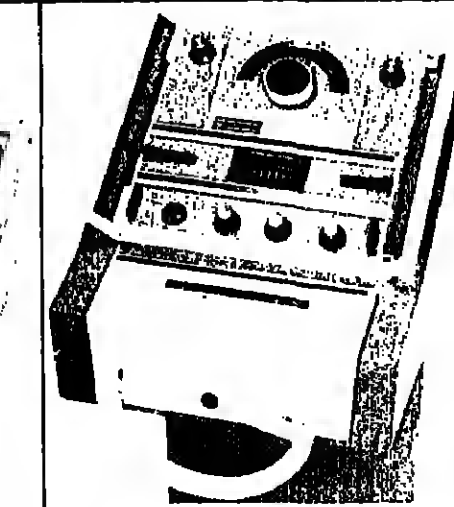
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FAO WORLD FLEET...



REPRESENTING one of the fleet's broadest categories, this 29.7 metre vessel was built in Spain.

HAVING more than 50 fishing vessels ready to operate in any part of the world is the exacting task of John Fitzpatrick, manager of FAO's fishing fleet, which ranges from trawlers to launches, most of them being multi-purpose vessels.

The problems of keeping such a scattered fleet in service condition and available on call has long troubled FAO's Department of Fisheries.

"Some of these problems arise from the poor maintenance and repair facilities available in many of the developing countries," Fitzpatrick explains. "There are also such simple difficulties as ensuring the supply of fuel. Other complications arise from the various adminis-

trative procedures found in most countries and the conditions of employment of local crews."

Also involved are questions of funds for local operational needs, insurance for vessels and crews, delays in delivery of vessels, and the clearance through customs of spare parts, which may take months.

John Fitzpatrick, who started his life in engineering in Scotland, is a chartered engineer and a member of the Institute of Marine Engineers, among his other qualifications, and has had experience in the past 19 years ashore and afloat. He joined FAO in 1970 and became Fleet Manager in February, 1975.

An essential organisational step for improving the "availability" of FAO's fishing boats for service was to form a pool where they could be assembled after completion of each project operation.

"We are now assembling them at Panama," he said. "The vessels, as they come into the pool, can be serviced and refitted, ready to move on as required to the next job. Through this arrangement, we can use their idle time to prepare them for their next job."

Not all vessels can be used for whatever job comes along. In general, those of 15 metres or more overall can be transferred from one country to another "without encumbrance and at reasonable cost" for work in marine fisheries. But boats on inland waters are more difficult to transfer as they are usually

And the expert whose job is keeping vessels at the ready

restricted to work on lakes, rivers and inland seas.

"Boats under 15 metres overall are usually built for specific purposes and cannot be switched into other work," he explained. "All our vessels need to be screened on completion of a project to determine whether they are worth retaining in the pool or should be turned over to the government concerned to continue to work in that country."

Charters

He ascribes the greatly improved "availability" of FAO's multi-purpose fishing vessels to a variety of reasons. These include the speeding up of delivery of spare parts, the easing of administrative constraints, the benefits derived from employing highly-qualified international staff as engineers and deck officers, and, of course, the pool arrangements for refitting and servicing the vessels.

Member governments are

taking advantage of this improvement by chartering FAO vessels. Such charters earned about \$1,400,000 last year. There are already firm proposals, such as through forthcoming FAO projects, for the use of most FAO pool vessels at the end of 1980.

A serious aspect of maintaining the FAO fleet is the steep rise in the cost of boats. As far as FAO is concerned, multi-purpose fishing vessels are the most practical because they can be adapted for various kinds of fishing and can be switched from country to country.

Some examples of multi-purpose fishing vessels in the FAO fleet are side trawler/long liner/trawler, stern trawler/purse seiner, trawler/purse seiner/trawler and research combination fishing; and shrimp trawler/purse seiner.

The main problem these days is to meet the cost of replacements, particularly of research vessels. Many more of these are needed by

HAITI, COSTA RICA, CAMEROON...

Two-million dollar contracts placed

FISHERY development contracts, in Latin America, the Caribbean, and West Africa, worth more than two million dollars, have been won by a Canadian company based in Halifax, Nova Scotia.

The projects, said William C. Lec, president of Corere (Renewable Resources Consultants Ltd.) result from "many months of delicate negotiations."

One of the contracts, signed with the Consejo Nacional de Produccion de Costa Rica, involves two projects which are part of a new national fish processing scheme in Costa Rica.

The first of these is for the design of a fisheries terminal in Cocal de Puntarenas; the other is for the design of vessel provisioning and unloading facilities for the Pacific Coast artisanal fishing fleet. This project will also be located in Puntarenas.

The fisheries terminal will be owned by the government of Costa Rica and will serve as a wholesale and retail centre with cold storage, dry-salting plant and fish meal and oil processing machinery.

These projects form part of a 20 million dollar fisheries development programme financed by the Inter American Development Bank. Corere's second contract has been awarded by the Republic of Haiti for a one-year exploratory fishing programme and for the creation of fisheries development plan for the country.

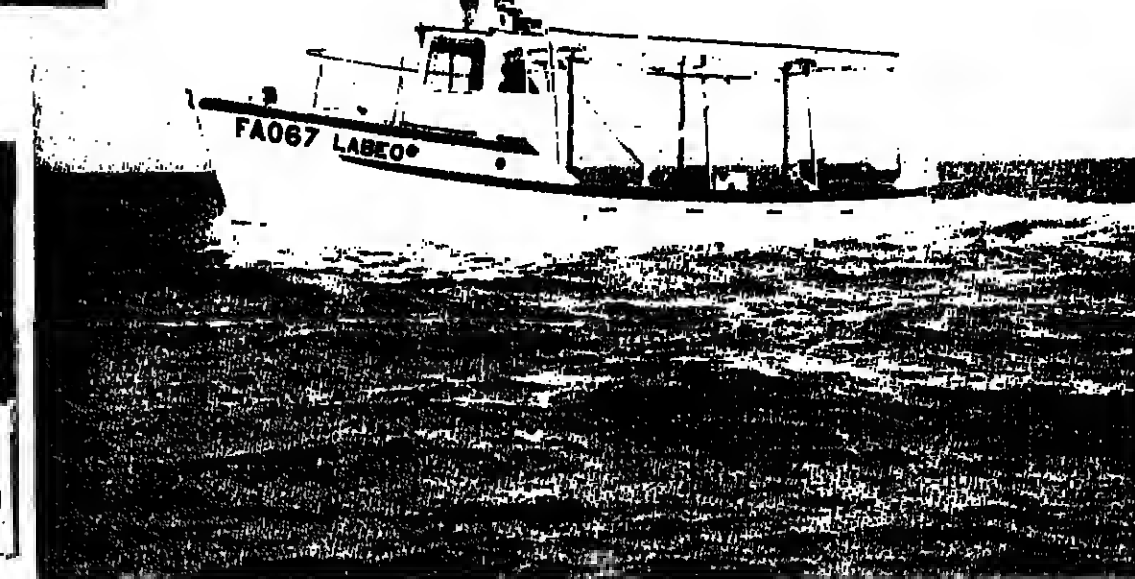
It includes identification of Haiti's marine and fresh water resources; outlining fishing vessel requirements; port facilities and fish handling and processing facilities. It also includes a marketing study for national and international distribution. The 14-month contract, costing 750,000 dollars, is being also financed by IADB.

The African contract involves a project for modernisation of a small-scale fishery in Cameroon. Corere was selected as part of a group of companies to provide technical assistance for this programme.

In addition, the company was recently awarded two contracts for private interests in Mexico. These involve developments in the tuna industry.



FAO fleet manager John Fitzpatrick.



THE MORE specialised 12.2 metre boat, built in Britain for lake fishery in West Africa.

developing countries to help them make the best use of 200-mile zones.

A 30-metre overall vessel that cost about \$300,000 eight years ago now costs more than \$1.6 million from the same yard. And all related and associated costs have similarly increased. This rise is so steep that it imposes an additional heavy burden on developing countries.

Training

"But that is only the start," Fitzpatrick points out. "In addition, they have to undertake training of crews at all levels, as well as build up and improve all shore facilities."

These are some of the reasons why FAO is seeking to promote more co-operation between developing countries in each region. In particular, sharing the use of fishery research vessels, and being jointly involved in fisheries research and development in their region, enables the countries concerned to meet their new obligations on a cost-sharing basis.

Such a practical, commonsense arrangement is appropriate in most regions where neighbouring countries, if not the region as a whole, share fish resources.

MASTRA WINCH FITTED

A SPECIALLY modified Northern Tool and Geer Mastro winch was recently installed by the British White Fish Authority aboard the Saudi Arabian government's first research vessel.

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The research vessel FRV was used in Northern Wales from 1972 to 1975.

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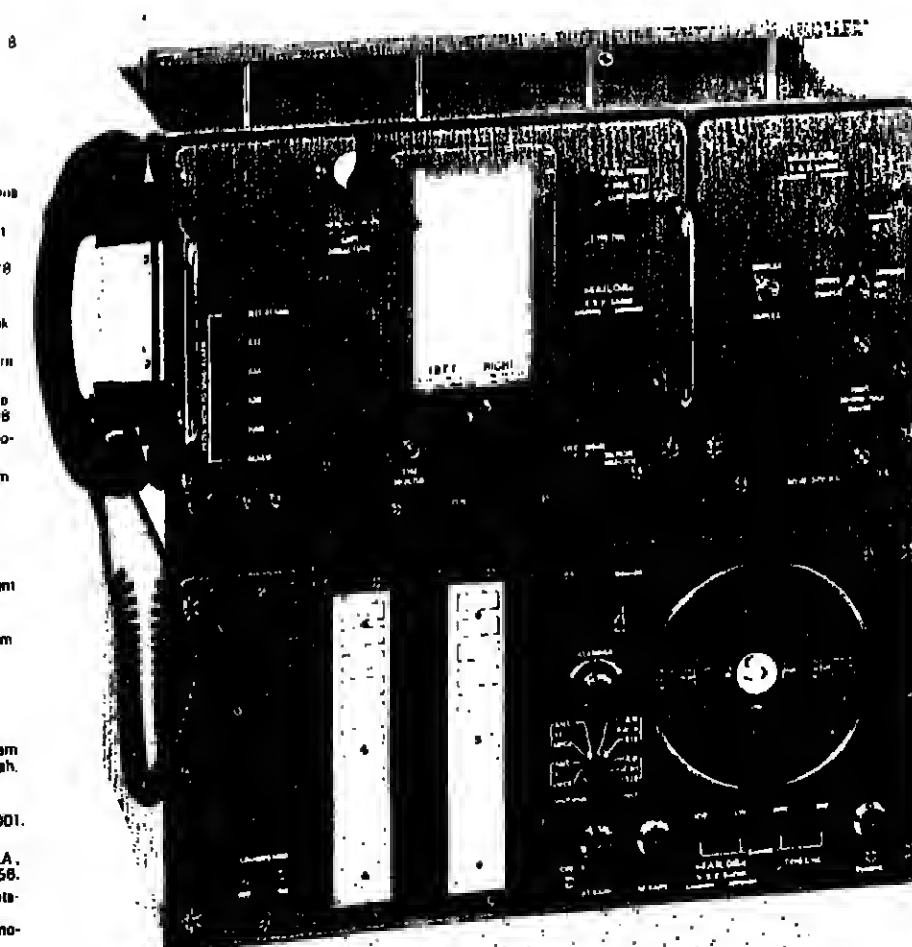
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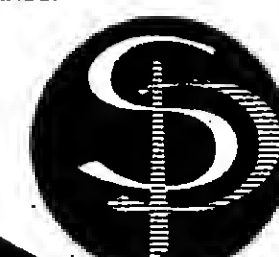
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TWO ASPECTS OF Big business



UNDER REPAIR: work goes on under the shade of palm trees

IN FNI last month, we reported the interest being shown by shipbuilding countries in the growing need of India for modern trawlers to work in the deeper offshore waters. To meet this need, India is having to import vessels, but local yards are putting their claims in for a share of the market.

One of the reasons for the Indian deepwater fishing development is the new 200-mile exclusive economic zone. An even stronger reason, perhaps, is the substantial entry into larger-scale fishing of the big business houses. Our correspondent TREVOR DRIEBERG reports from New Delhi on this aspect of Indian fisheries.

But India remains a country of small-scale fishermen and thousands of small boats and small yards, as our FAO correspondent CEDRIC DAY reports.

As the money spenders move in

THE INDIAN government's policy on the entry of big business houses into the fishing industry was explained recently by Surjit Singh Barnala, Minister of Agriculture.

He told the Lok Sabha (Lower House of Parliament) that it would not be possible to bar their entry into deepsea activities, partly because of the capital-intensive nature of the venture and partly because of the urgent need to exploit the potentially rich fisheries in the Bay of Bengal and the Arabian Sea.

At the same time he gave an assurance that the government would protect the interests of small fishermen.

Fishery experts believe, however, that the small operators cannot be protected merely by making more deepsea craft available to groups other than business houses or by demarcating different operational zones for different interests.

Compelled

Mr. Barnala has said that trawlers belonging to large business houses would have to operate beyond a 45-mile limit from the shore, while other mechanised boats would be kept five miles from it. But aside from the fact that it is physically impossible to fix separate zones, enforcing such a policy presents a number of problems.

Further, no comprehensive study has been made of the potential of areas beyond a depth of 40 fathoms and the economics of operations connected with them. The Exploratory Fisheries Project, Bombay, has undertaken studies down to 40 fathoms.

In the fiscal year ended March 1978, it operated 23 steel trawlers to survey again about 20,000 sq. km. in 1,529 days of actual fishing. No surveys could be conducted beyond that depth for want of the required type of vessels and equipment.

The strongest argument in favour of permitting the large-scale entry of big business into deepsea fishing is their financial, organisational and marketing capability.

Experts calculate that a viable deepsea fishing unit in India needs three to six 75ft. (22.9m) trawlers costing between Rs4.5 million and Rs5 million each plus working capital of at least Rs2 million in the first six months of operation.

An investment of this magnitude is believed to be beyond the capacity of

individual small operators or even of co-operatives of small fishermen.

Early in 1975 the Indian government set up a five-member committee to examine this and other issues. In its report, submitted in April 1977, it suggested that big houses should be brought under a system of registration and licensing and should be compelled to concentrate on export markets. They should also be permitted to buy fish other than shrimp in the open market in addition to their own catches.

According to the *Financial Express*, New Delhi, the experts feel that the government should encourage joint collaboration ventures with foreign interests for tuna fishing. About three years ago, the Ministry of Agriculture called for applications from Indian nationals ready for such collaboration, but the response was poor and the proposal was not followed up.

The same newspaper reports from Madras that the government is considering the charter of factory vessels with built-in facilities for processing and packaging.

Resources

With the declaration of a 200-mile economic zone, the government chartered a large freezer trawler from Poland in 1977 for deepsea work. The ship surveyed the north-west coast of India and landed about 500 tons of fish from 1,500 hours of actual fishing.

This project was responsible for introducing and popularising fishing techniques such as bottom trawling, purse seining and long lining for exploiting demersal and pelagic varieties of fish. It also improved in-vessel training and contributed to building up technical manpower including skippers, fishing second-hands, fishing engineers and engine drivers.

INDIAN FISHING — small boatyards

ONE OF THE impressions I brought away from my recent tour of fishing places in India is that local boatbuilding is flourishing, stimulated by government activities.

By "stimulated," I mean not only the introduction of improved boatbuilding techniques but schemes whereby fishermen are assisted in acquiring vessels.

When visiting villages and fishing centres in several states, I saw both governmental and private boatbuilding yards at work.

For example, there are four yards operated by the Fisheries Development Corporation of Madras.

Three of the yards build 30ft. wooden vessels with 60 hp engines, while the fourth builds boats of 43ft. 6in. to 50ft. (These latter are used for fisheries survey work).

The four yards have a production capacity of some 200 vessels a year. The fishing boats are sold direct to fishermen and cost from 150,000 to 180,000 rupees (£9,500-£11,000) a vessel. Groups of four or more fishermen usually combine to buy a boat and pay for it by instalments up to a limit of seven years.

If the fishermen fall behind with their payments by three months, the boat is seized and is not released until the payment is brought up to date.

Over the past ten years, some 2,500 boats have been sold to fishermen under the scheme. The demand has been such that the official yards have not been able to cope with it, so many private yards have benefited. In fact, the private yards have built some 1,300 of the 2,500 boats sold to fishermen.

Backlog

The boats in general are used for trawling and gill-netting and have holds for about 2.5 tons of fish each trip. The demand for the boats is very strong and the yards are struggling to meet a backlog of orders of more than 1,000 vessels.

This situation seemed to be typical of boatbuilding in the maritime states I visited. My general impression was that the small boatyards, to be found under the shelter of palm trees on the benches adjacent to villages and larger fishing communities, had not only a higher productivity rate, but a better standard of workmanship, even though not so well equipped with modern power-operated tools.

Most of the yards I have referred to are those engaged in construction of wooden vessels. This is the type of boatbuilding general in the fishing communities. However, I should stress that boatbuilding in India is a much more sophisticated industry than that indicated in my reference to village beach yards.

Apart from the construction of commercial vessels of various kinds, even in the fishing vessel sector there are some 16 yards which construct modern trawlers. There are also a number of

Boom time... even in the villages

yards where vessels are built of such modern materials as fibreglass and ferro-cement as well as of steel and wood.

Another interesting development in India is the increasing manufacture of marine engines. Many of these are being made under arrangements and in co-operation with well-known Western engine manufacturers.

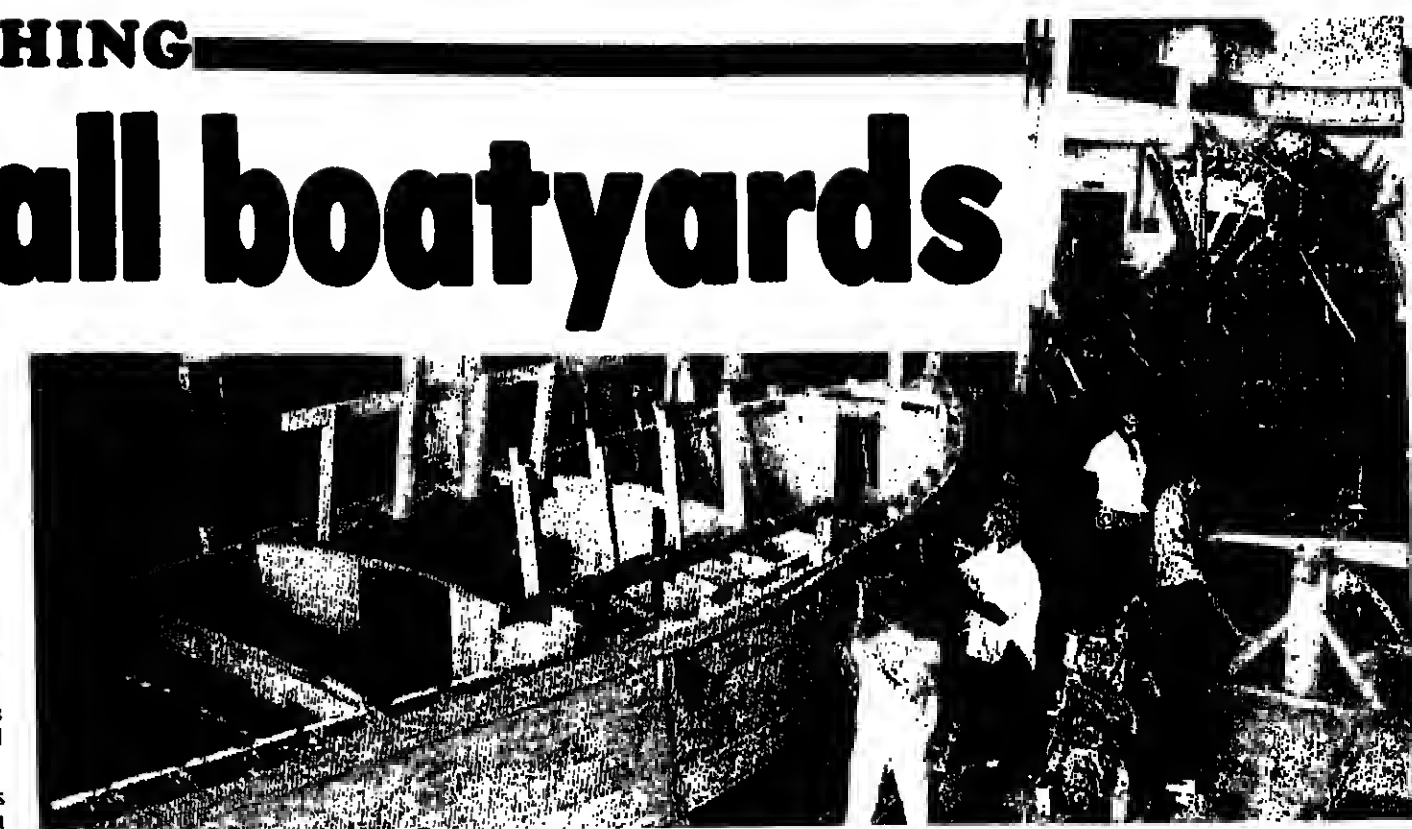
The scope for mechanisation of fishing boats is enormous — there are less than 13,000 mechanised vessels out of more than 200,000 fishing craft in India — and the demand for suitable engines is increasing. One indication is the fact that (as reported earlier) the four official Madras boatbuilding yards have a backlog of orders for more than 1,000 of their wooden mechanised fishing boats.

That is the situation in Madras alone. The demand is at least as strong, if not stronger, in all the other maritime states.

Orderly

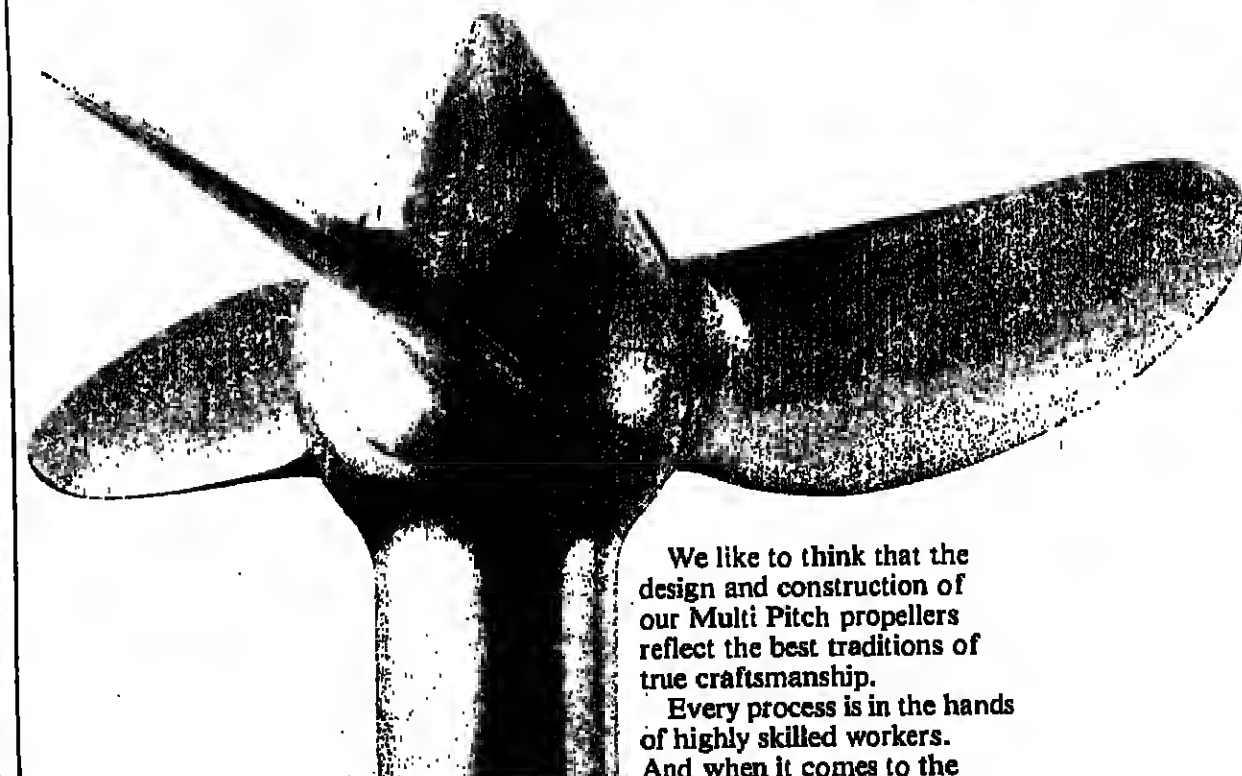
With the growth of mechanisation, of course, there is the accompanying growth in demand for service and maintenance. Such service is essential for orderly growth of mechanised fishing because of the lack of mechanical skill and 'know-how' among fishermen.

The loss of fishing time because of mechanical breakdown is a chronic feature in fishing operations in developing countries such as India. The need, therefore, of a continuing increase in repair and maintenance facilities to keep 'up with' increasing mechanisation is essential for the well-being of the fishing industry of the country.



BEING BUILT: another boat takes shape in a small yard in Kerala State

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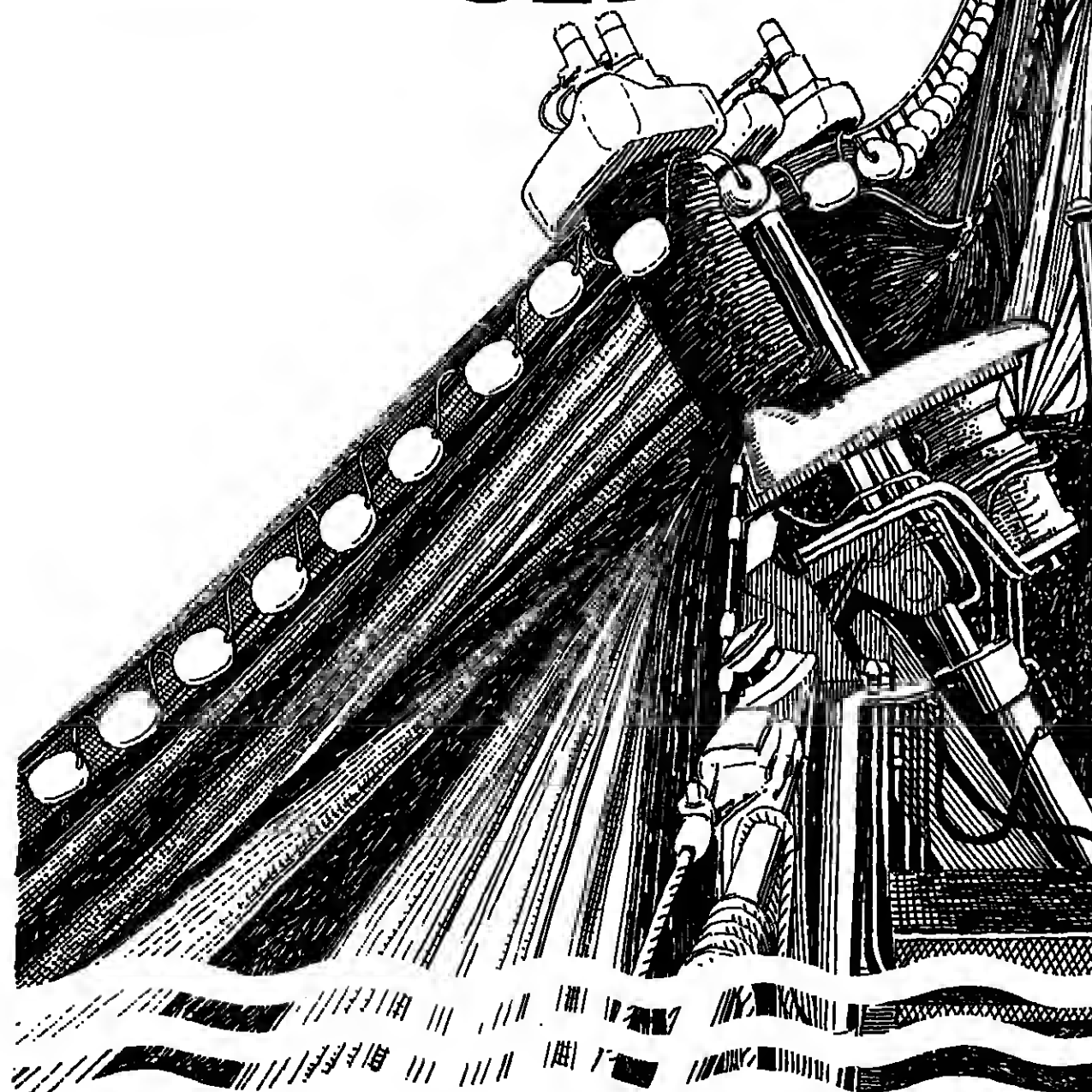
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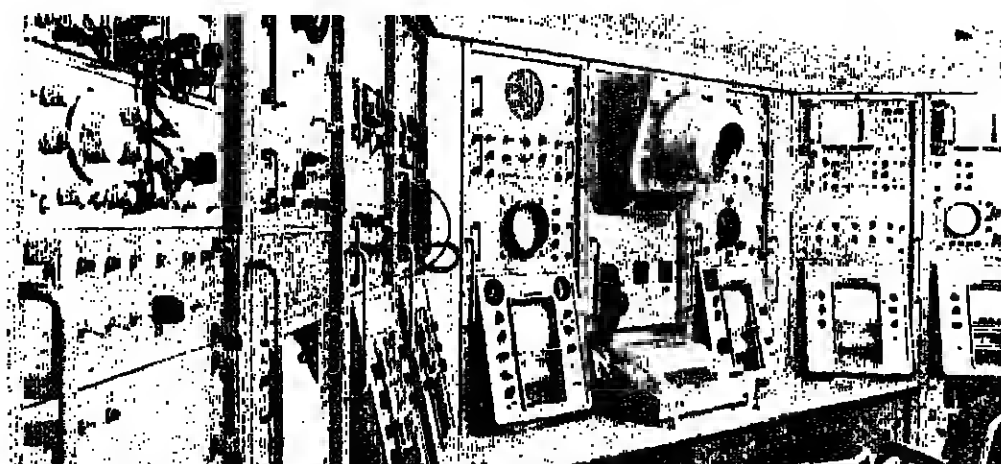
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Nerve centre of the G.O. Sars's survey operations is the 'Search Room' with its array of Simrad instruments.

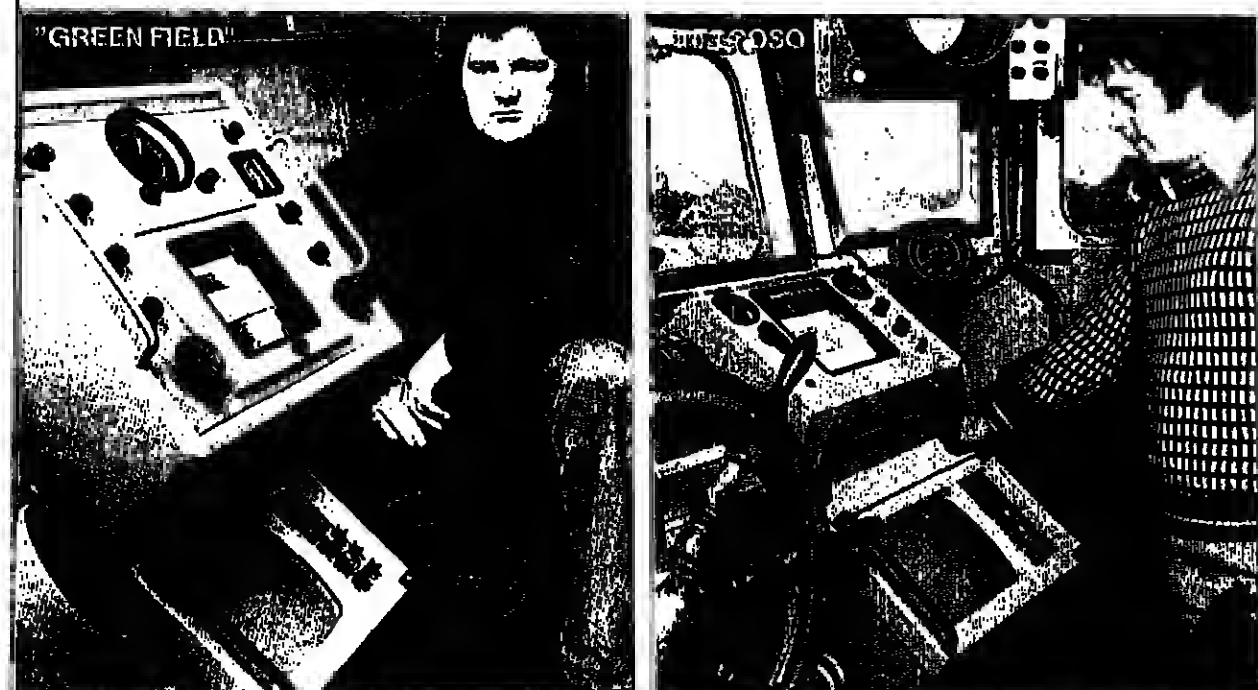
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It has been said that mackerel could only be seen on high frequency sonars. This has been proved wrong, particularly by Mr. Tom Stevenson of 'Green Field' and Mr. Alen Nicholson of 'Pescado II'. The skippers of 'Green Field' and 'Sedulous' were also among the first to detect mackerel on their SQ sonars at 1200 to 1750 m, and other fish at the full 2500 m.

Mr. Stevenson (SQ sonar) is very impressed with the large CQ scope. Its memory store gives a steadier picture, making it easier to determine the size, shape and direction of the shoal. "A lovely picture," he said, "a big advance on existing scopes. It gives good returns at 2500 m, with mackerel at 1250." He also liked the master/slave facility and very short ranges provided.

Mr. Nicholson was the first to try out a modification to the SL sonar which greatly improves fish detection, especially mackerel. "I'm very pleased with this," he said. "I'm getting mackerel at 1500 m. by day and 500 by night." He was also delighted with the new CQ scope, particularly the definition, master/slave facility which saves paper, and the offset arrangement.

World leader in professional fish detection

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NOW in her eighth busy year of operation for the Institute of Marine Research, scientific arm of the Norwegian Fisheries Directorate in Bergen, the G. O. Sars has kindled the enthusiasm of both the seamen who run her and the scientists who set her special tasks.

Deputy director of the Institute and manager of research fleet operations, Odd Nakken, says the Institute is very satisfied with the ship. She has proved reliable, robust and adaptable to changing circumstances.

Modified to meet varying requirements, the G. O. Sars today represents the wealth of Norwegian fishery research experience accumulated ever since her namesake studied the Arctic cod about a hundred years ago and founded marine biology and the management of marine life in Norway.

Last month the G. O. Sars was back at her builder's yard, Mjellum and Kurlen, to be stripped of her purse seine gear and to have new enclosed lifeboats mounted.

Simplex are now taken exclusively by trawl and spud aboard at a premium.

Her new lifeboats, which will soon be required by law on ships over 1600 grt, could mean the difference between survival and a cold death in the Barents Sea, where the G. O. Sars operates for a large part of the year.

Major modifications have been made to the ship's electronics during the course of her career. Older equip-

ment has been updated and the capacity and scope of the computers expanded in order to handle increasingly complex data.

By using a special technique of echo-sounding, sonar registration and computer analysis, the G. O. Sars made a breakthrough in fish stock research for the Norwegians. The technique itself appeared almost simultaneously in Britain, Canada, the United States and Norway. It was first used in the surveys of blue whiting from 1970 to 1974.

The main task of the G. O. Sars has been updated and the capacity and scope of the computers expanded in order to handle increasingly complex data.

After eight years in service, the G. O. Sars has proved the right ship to meet the challenges of the 1970s. Others have followed her. But few can have matched her enormous contribution to modern studies of fish stocks or her reliability year after year.

In this special report, NICK WADE describes a recent visit to this outstanding ship.

Sars is to gain knowledge of the size and distribution of fish stocks, especially the populations of young fish which are too small to be caught and cannot be assessed by any other method.

Odd Nakken believes that without the G. O. Sars it would be very difficult, if not impossible, to estimate the stocks and distribution of fish of the 0-1-2 year classes. Capelin, for instance, generally measure no more than

12cm. for the two-year-old class.

The primary purpose of the assessment work is to regulate catching of renewable resources in order to maintain the stocks at optimal levels.

Data are collected by the G. O. Sars and other vessels. Based on this, the Fisheries Directorate recommends the allowable catches.

The research fleet operations have always benefited from the solid backing of the Norwegian governments, al-

though national fishery policy has at times been hotly disputed.

In addition to assessing fish stocks, the G. O. Sars makes physical and chemical analyses of the sea and marine life.

She monitors the sea for pollution by water sampling and analysis.

She performs a whole range of oceanographic tasks, such as measuring salinity and temperature and current.

She operates in all waters where fish of importance to

the Norwegian fishing industry are found. Recently capelin has been her main target.

The ship's operating budget is nine million kroner a year. On this she stays at sea a good 280 days on the average, not much below the working year of a trawler or purse seiner.

She has a crew of 22 plus 16 scientific personnel.

The G. O. Sars makes three expeditions a year to the Barents Sea and logs around 50,000 nautical miles.

The lapse of time between the final assessment and the onset of the capelin fishery is shrinking as it is becoming crucial to have the latest reliable data.

A first assessment is made from January to March at the start of spawning. The main migrations are detected and assessment is made of the spawning stock.

The next investigation comes in two parts: first, in May and June, the abundance of the 0-year class is mapped

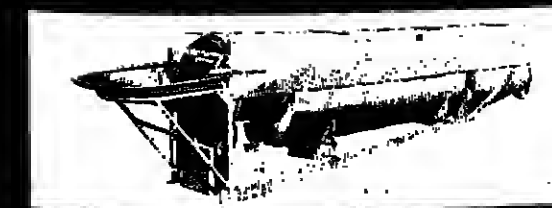
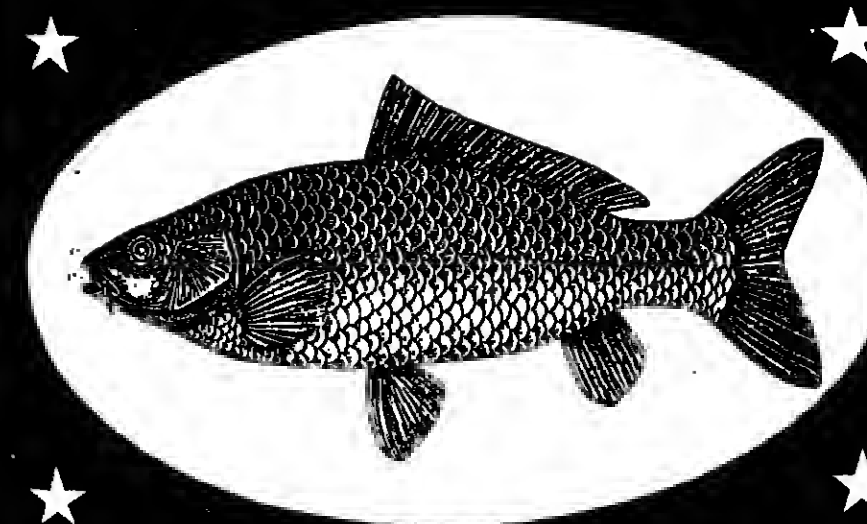
This is done largely by chartered vessels.

The main thrust of the summer assessment comes in June and July, when the G. O. Sars leads a survey of the 1-2-3-year classes before the summer fishing.

The final investigation comes in September and October. This is the most important survey of them all, as it assesses the entire capelin stock.

turn to Page 53

Well washed fish with the WACO Cross Current Fish Washing Machine



The machine is of universal use not restricted to certain types or sizes of fish but permitting

the washing of all fish normally to be caught from herring to cod without requiring adjustment of the machine. In addition the fish may be fed into the machine either whole or gutted or even filleted and as spillfish.

The following are included among the outstanding features of this machine: —
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water is immediately drained thus avoiding any contagious infecting of the fish.

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3. In actual practice the cross current washing principle represents an individual washing of each fish due to its being rolled over and thoroughly jet sprayed from all sides.

More than 200 fishing vessels of the international fleet have been equipped with WACO fish handling systems.

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TAILING western rock lobster at a Fremantle (Western Australia) export processing plant.

AUSTRALIA'S BIG FUTURE

EXTENSION of Australia's fishing zone will give this vast country control over a sea area nearly as large as its land mass. Some of the implications of this development were outlined in our May issue. In this special report for FNI, PETER POWNALL looks at the industry that will be the main exploiter of the new EEZ.

LEGISLATION extending jurisdiction over foreign fishermen from 12 to 200 miles was introduced in the Australian Parliament in April.

The new zone may not come into full force until 1979, but passing of the legislation by Parliament in June has closed the Gulf of Carpentaria to foreign fishermen.

The Gulf is an important prawning ground and the activities of foreign vessels there have caused concern for some years. To protect the grounds, the Australian government has limited the number of Australian trawlers that can fish there, and closed it at certain times for the taking of banana prawns.

While there is no evidence to suggest that

foreign trawlers (mostly Taiwanese) have been catching prawns in the Gulf outside the 12-mile declared zone, the government considers the area should be closed to foreigners to avoid possible conflict with Australian fishermen.

Introducing the legislation establishing 200-mile, the Australian Minister responsible for fisheries, Mr. Ian Sinclair, warned against reports that spoke of vast fisheries resources in the zone.

Australia does have one of the longest ice-free coastlines in the world, 34,734 km, extending over some 10 degrees in latitude but the fishing resources do not match the immensity of the zone itself. The fishing industry is therefore small by world standards, but with the stimulus of the EEZ it is expected to expand considerably.

Existing Australian fisheries are almost entirely on the shelf and generally within the present 12-mile limit. But the EEZ will bring large areas of deep ocean into Australian jurisdiction. Probably only about 30 per cent. of the extended zone will be within the 200-metre depth contour.

Major additional new fishing areas will be:

NORTH

- Along the north-west and northern coasts between the North-West Cape and Torres Strait.
- Off north-eastern Queensland.

SOUTH

- Minor but significant areas in the Great Australian Bight, along Australia's southern coastline.
- About Bass Strait.

In the south the additional shelf areas support a mixture of species similar to those already exploited in shallower waters of the same area.

These species are not at present being fished by other nations, but they provide the Australian industry with substantial opportunities for expansion.

In the north the situation is different: Over the last four or five years waters there have been fished extensively by other countries, particularly Taiwan, whose vessels work off the north-west, north and Gulf of Carpentaria coasts for bottom fish. In 1976, their catch was estimated at about 75,000 tons.

The Indonesians and Japanese also work waters that will be within the Australian 200-mile zone. The Indonesians operate in a restricted area in the north-west but their total catch is negligible.

The Japanese have been catching adult southern bluefin tuna within and beyond the zone, off eastern and Southern Australia, using a fleet of about 350 vessels. Their catch within the 200-mile zone was about 10,000

An emerging
giant taking
care of its
resources in
new one...



DREDGING for scallops off the east coast of Australia.

within the 200-mile, certain waters may be excluded.

'Excepted' waters are those where the government may delay or exclude the establishment of the Australian fishing zone.

'Treaty' waters are those described in an agreement between Australia and another country which are not to be taken as part of the Australian fishing zone.

This recognises the possibility that where Australia's 200-mile zone overlaps that of a neighbouring country, treaties will be negotiated to define the extent of fisheries jurisdiction of both countries.

Australia, in some cases, will be obliged to grant access to foreigners to take fish that Australians cannot adequately exploit.

Fishing licences

The government can also demand information concerning any undeveloped or unknown fisheries that may be discovered by foreigners within the Australian zone.

As the success of foreign fishing operations in the Australian zone may depend on access to Australian ports, there is provision for endorsement of licences to permit vessels to be brought into specific ports at specific times. In certain cases they will also permit the landing of catches.

Conditions on classes of fish that may be caught, processed or carried; the quantity of or rate at which fish may be taken; and the methods or equipment that may be used to take, process or carry fish may also be endorsed on foreign licences.

There is also provision to set the fees for fishing licences within the Australian zone. And there are stiff penalties for unlicensed foreign fishing inside the zone and for infringements of regulations.

The catch: facts and figures

THE ANNUAL catch of the Australian fishing industry is about one-thousandth of total world production, but its value, at about \$A200 million, is relatively high. This is because the catch contains a high proportion of crustaceans (rock lobster and prawns) and molluscs (abalone and scallops) that are sold on world markets.

Australia is the world's largest producer and exporter of rock lobster. The annual catch is 13,000 tonnes and exports in 1976/77 were worth \$A59 million.

The fishing fleet comprises about 9,000 vessels (a capital investment of around \$A226 m.). Most are relatively small.

Just over 150 registered long-based plants process the catch. Most of them are small and are in rural areas employing predominantly casual labour. Only 20 per cent. have an annual throughput of more than 1,000 tons.

In 1975/76, the Australian catch comprised 60,111 tons of fish, 36,660 tons of crustaceans and 22,657 tons of molluscs. It was worth a total of \$A198,063,000.

In 1976/77 edible marine product exports were valued at \$A135 m. Fish imports totalled \$A109 m.

WRAWLER equipped to process the catch on board for export.

tons a year. The Japanese species in waters of Australia.

Australians are active in pelagic fishing at sea, species they seek are tuna and the Australian salmon but a type of Australian finfish is taken in the north-western zone.

Skipjack will provide an opportunity, and Australia is active in a major way in the region. The South Pacific undertakes the same in the fishery.

fishing authorities have introduced management regimes to conserve stocks of rock lobsters, prawns, scallops and abalone.

Australian fishermen also exploit heavily the demersal fisheries located near large population centres, and authorities have introduced some conservation controls.

Common species caught include the morwong, flathead, red gurnard, a variety of small and edible snappers, gemfish, snapper, whiting, John Dory, leatherjacket, cod, bream and mullet.

In an attempt to assess the resources in its extended fishing zone, Australia is inviting fishermen from other countries to apply for feasibility fishing rights.

Under this programme the government

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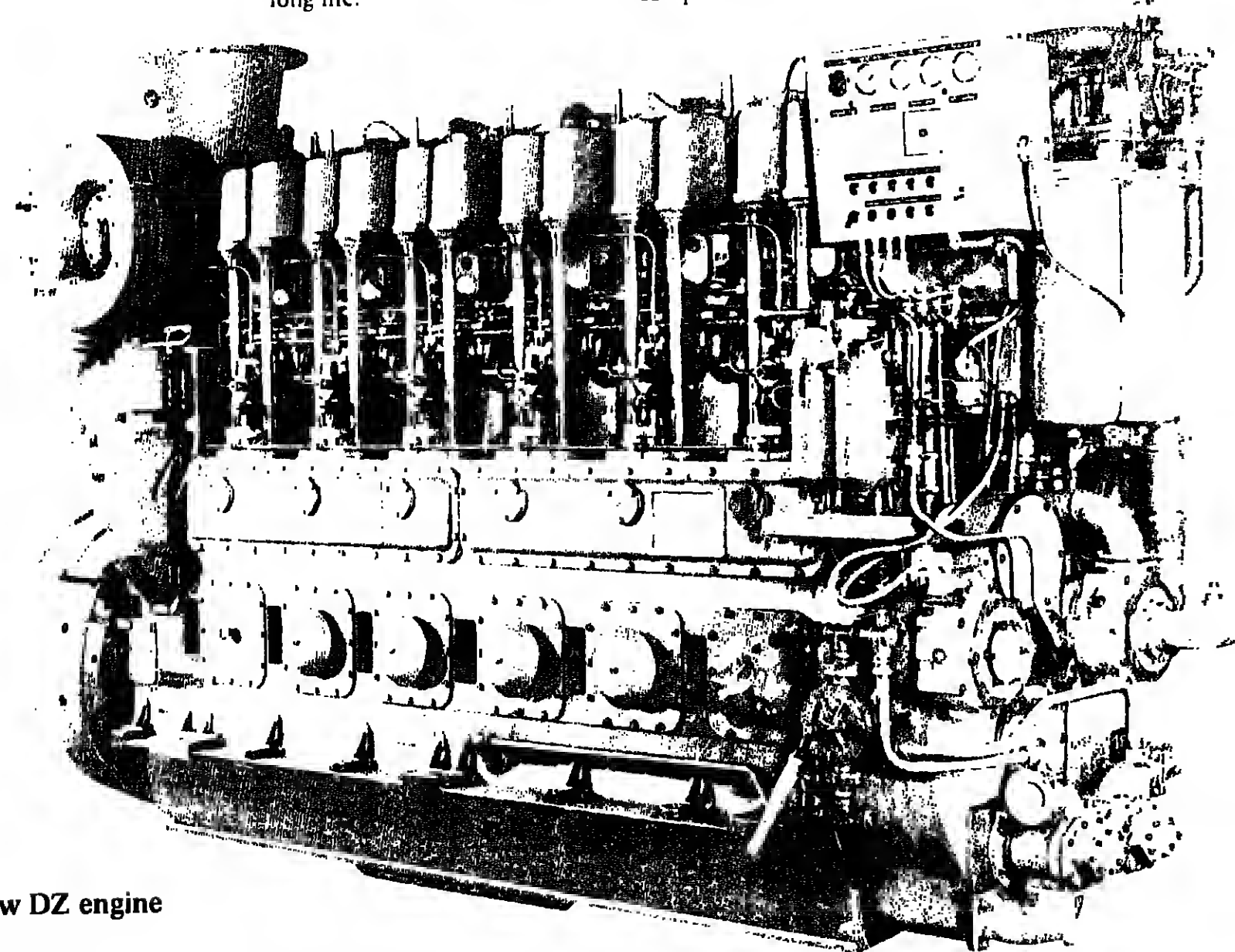
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But there's a lot more to them than meets the eye. Things like their incredible economy, remarkable quietness of operation, excellent torque characteristics—all this means superb value for money.

In addition there is a comprehensive after-sales service, with trained technicians available for routine servicing or in the unlikely event of a breakdown.

Find out more about ABC engines. There's a lot more to them than meets the eye.

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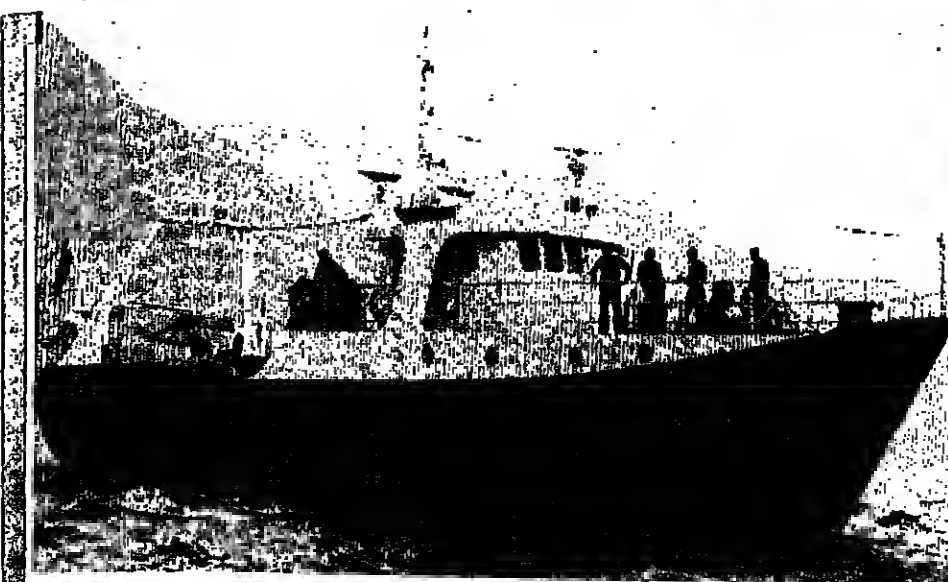
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BOATS & BUILDERS



NO SPACE WASTED!

Spanish designer packs it all in a compact 22-metre hull

THE LATEST VESSEL in the trend towards compact, high-performance small trawlers has just been built in Spain and could be the first of series. "She is," says her designer, Bontigui-Schumacher of San Sebastian, "the smallest stern trawler yet built that can be used anywhere for bottom and mid-water trawling. She has a ramp and a fish processing room below the trawl deck."

Named the *Curota*, the new vessel is only 22.5 metres (73.8 ft.) long overall and 18 metres b.p. She has a breadth of 6.6 m. and draught of 3.5 m. Gross tonnage is 130.

The vessel was built to the Bontigui-Schumacher design by Industrias Guria of Pisuerga de San Pedro for Salvador Nera Perez of La Coruna. She fishes off the Atlantic coast of Spain, taking catches of 20 tons and more in four hours. A sister ship is under construction.

Protection for crew

Details of the arrangement of the *Curota* can be seen in the drawing. The stern slipway is closed by gates. The raised slip and after section are intended to protect vessel and crew against any sudden surge of water on deck. There is space in the fish processing room for a freezer if required.

The vessel can be adapted for beam trawling and pair fishing. It is possible to increase the crew from the eight men of the *Curota* to 14. Two Barreiros model BS36 diesel engines provide main propulsion power. Each develops 250 hp at 1800 rpm, and together they turn a single screw through a Cifran 4.52 to 1 reduction gearbox.

Auxiliary power plant consists of two Indar 35 kVA generators driven by two Barreiros A26 50 hp engines.

Fuel oil capacity is 34 cu. m. and freshwater capacity six cu. m. The *Curota* has a 70 cu. m. fish room and another 60 cu. m. of space for the fish processing room which, presumably, can also be utilised for storing the catch.

To bring this catch in, the vessel is equipped with two Guria hydraulic trawl winch drums, each with a pull of 3.5 tons at 70 m/min. and capacity for 2,200 metres of 18mm. warp.

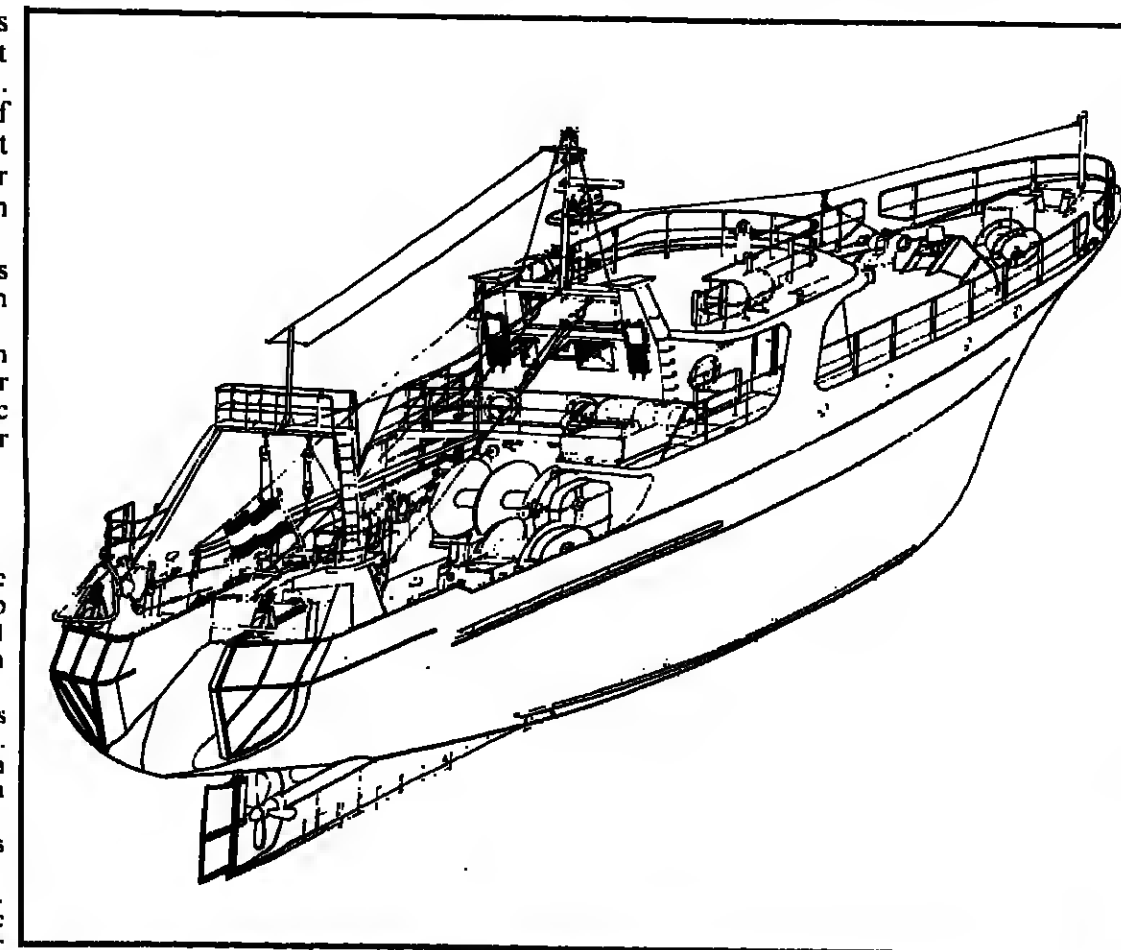
Net drum

Other deck gear includes a double net drum with a pull of five tons at 35 m/min., and the new Iberisa hydraulic winch for the net sounder cable.

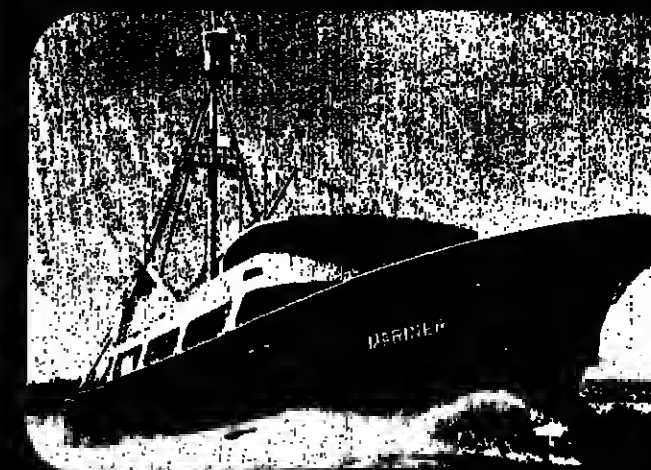
All winches are driven by two hydraulic pumps off the main engines.

Fishing finding and navigation equipment includes Simrad EQ echo sounder, Simrad FM sounder and Simrad SL sonar; Koden radar and Omega navigator; and Skanti radio telephone.

She's the smallest stern trawler yet built that can be used anywhere



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BOATS & BUILDERS

KING CRAB SUPPLIER

WHEN THE Alaska King was seen on the West coast of the United States, it was the first time since 1972 that a vessel of this type had been seen in the area. The King was a 100-ton vessel, built in 1972, and was the first of a new class of vessels. It was built by the Alaska King Shipyard in Kodiak, Alaska. The King was built for the Alaska King Shipyard, which is a subsidiary of the Alaska King Shipyard.



FAO carries on with concrete

FAO IS CONTINUING with its pioneering work in the introduction of ferro-cement fishing boats which began years ago with the test building of a boat in Thailand. That was followed by several projects and by the technical conference on ferro-cement fishing boats held in New Zealand in 1972.

John Fyson remains the man at FAO chiefly concerned with this work. "Many boats are now being built of this material," he told FNI correspondent Cedric Day. "For example, in Cuba yards are reported to be turning out up to 120 boats of 16 to 18 metres each year."

FAO keeps up several pilot projects in the field. One of these involves Tunisia with an 11.25 metre prototype.

This is based on a traditional double-ended inshore boat familiar along the Mediterranean coast. The test boat has been worked for some time and is reported to be well-liked by those using it.

"A boat of similar size but of a modern design will be ready soon," says Fyson. "And now the project is beginning the construction of a 17 metre boat suitable for purse seining for sardines. She also has a live well to hold lobsters."

Work has gone ahead on

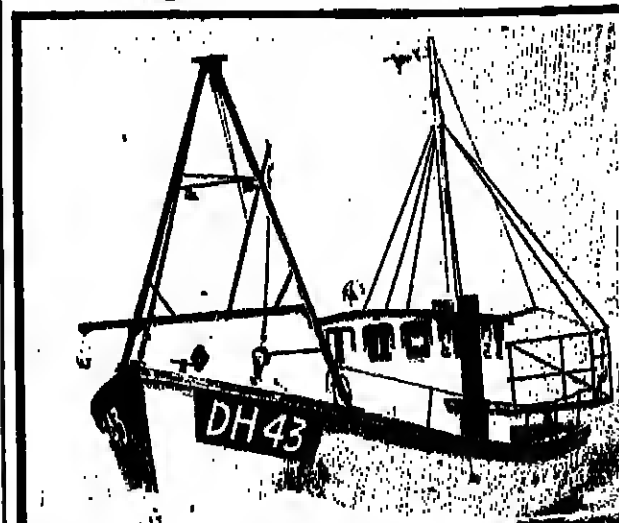
building barges of seven to eight metres in length for the transport of materials and equipment in the lake fisheries. Small flat-bottomed boats of around five metres long have also been built.

"These simple boats," Fyson explained, "have a hull thickness of only 12mm, which many people felt was beyond the capabilities of the material for workboat use unless an unacceptably low strength factor was adopted."

Wire fibres

But strength factors comparable with the equivalent weight of steel plate have been achieved, by using chopped wire fibres in the mortar mix, high tensile wire reinforcement and prestressing techniques.

FAO, in association with Alexander and Poore, a New Zealand company, is investigating the possibilities of these methods for ferro-cement fishing boat construction in developing countries.



BRITISH SKIPPER GOES FOR FIAT

ONE OF the first Fiat diesel engines for a United Kingdom fishing boat has been installed in a 37ft (11.3m) Cygnus Marine GRP hull.

The hull, completed by Weston Workboats of Weston-Super-Mare, Somerset, is also interesting as she is one of the first vessels of this size to use a four-bladed propeller. Named the *Anne Virginia*, she is fitted out as a potter with aft wheelhouse. Her hauling gear comprising a Seawinch 1½-ton hauler, is mounted on the starboard side forward. Duplicate engine controls are also located here.

The Fiat engine is installed aft of the fish hold forward. It drives through a Twin Disc MG 506 gearbox with a 2.9:1 reduction ratio. The propeller shaft is 2½in. stainless steel and the four-bladed propeller was made by Bruntons.

Owner of the *Anne Virginia* is Robert Eml from Dartmouth. He plans to work 350 pots and an interesting feature is the additional stowage space created by a rack over the transom.

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The 'lady' arrives at last

HER CONVERSION was slow and her departure long delayed, but the Hull record-breaking wet fish stern trawler *Hannond* has started her new career in Canada at last.

As reported in FNI in January, the *Hannond* hulk is a distant water ship which has been forced out of her traditional grounds by 200-mile limits.

She is now to be used in fishery research work off the Canadian Atlantic coast.

The ship has been bought by a Canadian company. She will work for the government under contract for five years under her new name the *Lady Hannond*.

NORWAY FILLET SHIP

Could she be the last?

WITH the proposed block on further expansion of Norway's small fleet of factory trawlers, the 62.1 metre *Ole Saetrem* (pictured above) could be the last ship of her type from a Norwegian yard for local owners.

It is perhaps appropriate, therefore, that she goes to pioneers of this advanced type of vessel. And she bears a name that has become synonymous with factory trawler development in Norway.

Carvel plug for new design

AT THE Cote 78 exhibition in Aberdeen last month *Halmatic* (Scotland) Ltd. showed the GRP hull production mould of its new design *Sherries 24* boat.

Halmatic have departed from their usual practice to build a traditional carvel 24ft. (7.3m) hull as the plug for a design by Murray Cormack Associates. The hull was of mahogany planking on an oak backbone and bent oak frames.

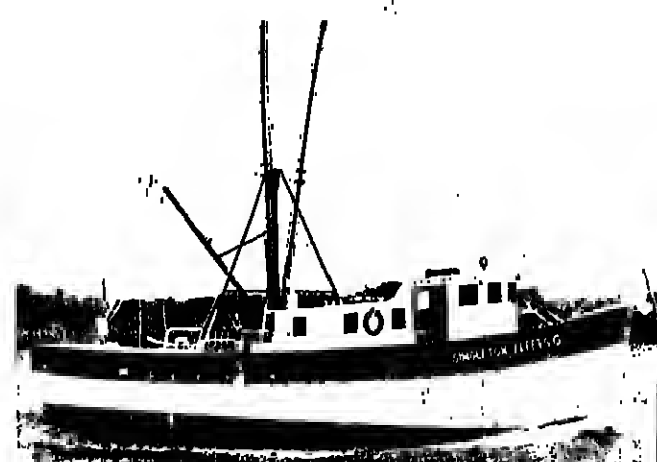
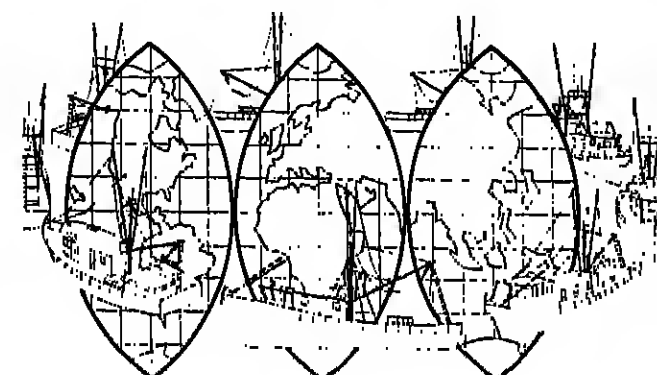
First boat from the production mould will be for an owner in Northern Ireland. The 7.3 metre long craft will be powered by a Lister 30 hp at 2300 rpm. She will be equipped with a Spencer Carter hydraulic pot hauler.

Machine line

She is fitted out with the latest high performance Baader machines. One line starts with a 161 gutter, and includes 189 filletter and two skimmers; the second line has a 160 gutter and 190 filletter.

Her freezing plant is by Kvaerner Kulde.

Winches and other trawl handling machinery is by Hydraulik Brattvåg. The main engine is a German MaK type 9M433AK diesel developing 3400 hp at 600 rpm and turning a Liasen controllable pitch propeller through a Volda/Liasen reduction gear.



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BOATS & BUILDERS

CNEXO gets new research ship

THE FRENCH research organisation CNEXO has taken delivery of a new 24.5 metre long fishery research vessel from Constructions Mecaniques de Normandie of Cherbourg.

Named the *Thalia*, the new vessel has a length b.p. of 22.4 metres, breadth of 7.4 m. and amidships draught of 2.55 m. She is powered by two Poyaud twin-diesel engines type A12 150M, each develop-

ing 360 hp at 1350 rpm and acting on a single propeller through Remy Barrere reduction gear. Service speed is 10.5 knots.

A stern trawler type vessel, the *Thalia* has an aft gantry and two fishing/dredging winches of 2.5 tons pull each.

In addition to a crew of six, she is designed to accommodate six or seven scientists.

They have a small laboratory and a container-laboratory can also be carried.

Two more shrimpers



LATEST addition to the fleet operating from Moss Landing, California, is the 75 ft. (22.9 metre) long GRP boat *First Cabin* (pictured above). A standard Desco Marine vessel, she will be used by her owner, Phil DiGirolamo, for catching fin fish and shrimp trawling.

The *First Cabin* is powered by a Caterpillar 3408 engine of 365 hp turning a Columbia fixed-pitch propeller through Twin Disc 6:1 gear.

Another Desco 75 footer has been built for Roger Marshall of Eureka. Named the *Wild Mary*, she is powered by a Cummins KT1150M engine of 365 hp.



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SCOTTISH skipper William Smith has taken delivery of the wooden seiner-trawler *Sunbeam*. And at 85 ft. she is the largest fishing vessel ever by Richard Irvin & Sons of Peterhead.

The *Sunbeam* will start by seine netting, but may well switch to pair trawling for white fish in the summer.

She is built in the traditional Scottish way with an aft deckhouse. Below deck she is sub-divided into forepeak, fishroom, engine room and cabin.

Sunbeam has a registered length of 79.8 ft., depth to keel 12.6 ft. and draft aft of 11.5 ft. Tonnage is 87.43.

Her hull is of oak and larch planking on

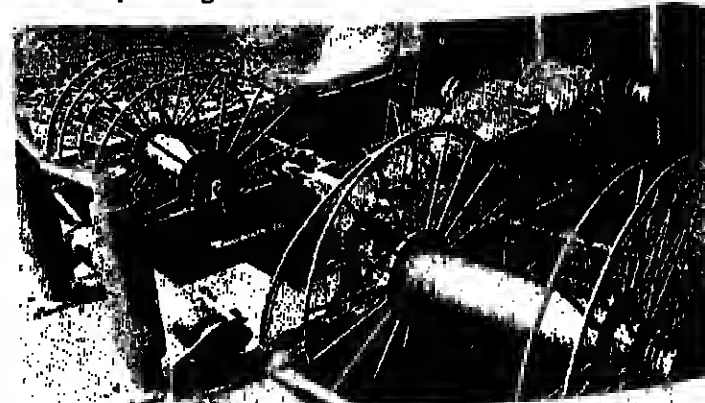
oak frames. Deck beams and stringers, engine bearers and the three main bulkheads are steel.

Propulsion is by a Mirreles Blackstone ESL6MGR air-starting engine of 600 bhp at 750 rpm. It drives a Bruntons four-bladed fixed-pitch propeller through Mirreles Blackstone NM3 3:1 reduction.

Her fishroom is arranged for boxing and shelf storage. It is served by two batches and insulated on the bulkheads. Steel stanchions and aluminium pond boards are fitted.

Despite the growing popularity of steel, Irvin plans to continue building wooden vessels as well as fitting out steel hulls.

Sunbeam's Loxie Hydraulics coile rope storage reels and Sutherland coile and Sutherland coile and Sutherland coile. Each reel has capacity for 17 coils of 3 1/2 in. rope. They are fitted aft of the winch and are fully controllable from the wheelhouse.



Ireland stern trawler series

THE FIRST of a series of standard stern trawlers for Ireland is under construction at Sheepwaf Hakvoort yard in Monnikendam. The complete hulls will be towed to the Irish Sea Fisheries Board yard in Killebegs for fitting out.

There will be two versions, both having the same basic hull layout with engine aft and fish hold amidships.

One has a conventional open deck aft; the other a shelter deck.

Computer

All steelwork for the hull is cut and frames and plating shaped by computer-controlled machinery.

The hull is of conventional round-bilge type with transom stern and a raised fore-cabin providing accommodation on two levels.

Overall length is 27.2 metres with a beam of 7.31 metres and depth of 3.70 metres.

The placing of this order may reflect a significant change in the strategy of Dutch fishermen; although some cynics are suggesting that Dutchmen are considering new vessels only as

FIRST BEAMER FOR THREE YEARS

THE FIRST large Dutch beam trawler built for three years is under construction at the Maaskant yard in Stellendam. At 40 metres long, she will also be the largest beamer ever for a Dutch fisherman.

Dutch yards have been having a lean time recently, partly through over-construction during 1974 and 1975 and partly through EEC quota restrictions.

The placing of this order may reflect a significant change in the strategy of Dutch fishermen; although some cynics are suggesting that Dutchmen are considering new vessels only as

a means of getting fishing licences. During the boom years construction of fishing vessels in Holland rose to over 50 a year. Many observers felt that this was too high in

continue, and the last three lean years are indicative of this.

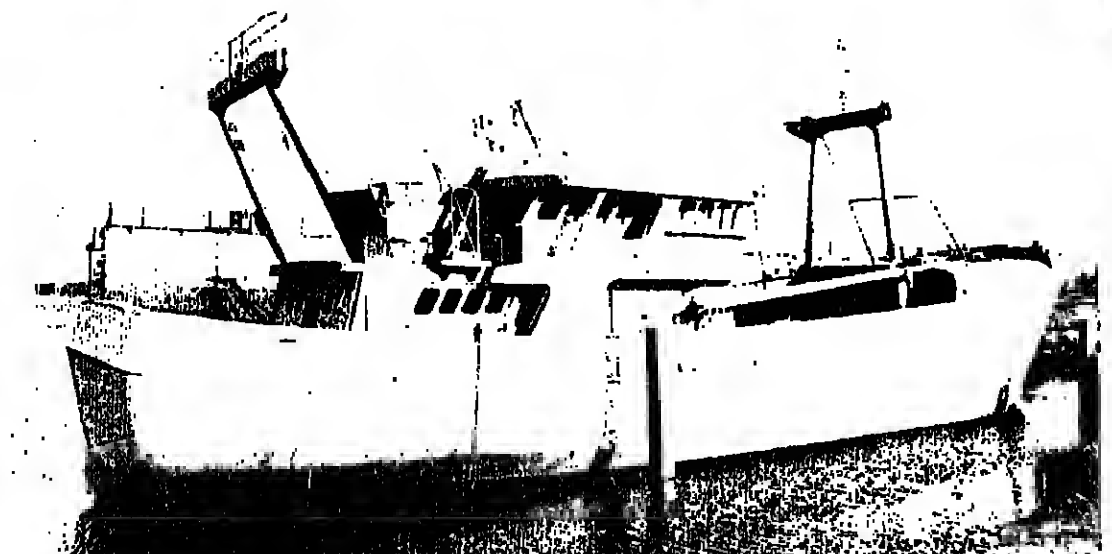
In order to cut back the fleet the Dutch Government has been subsidising the export of or scrapping older vessels.

But shipbuilders are now confident that further orders will follow and one yard in Den Helder is considering building a 37 metre vessel on spec.

The Maaskant boat will also be equipped for stern trawling. This is a safeguard in the event of a ban on beam trawling.

She will be fitted with on 1800 hp Bolness diesel. Winches will be by

● MORE British owners are taking their boats to Holland for lengthening and modification. *FN* reports on this development next month.

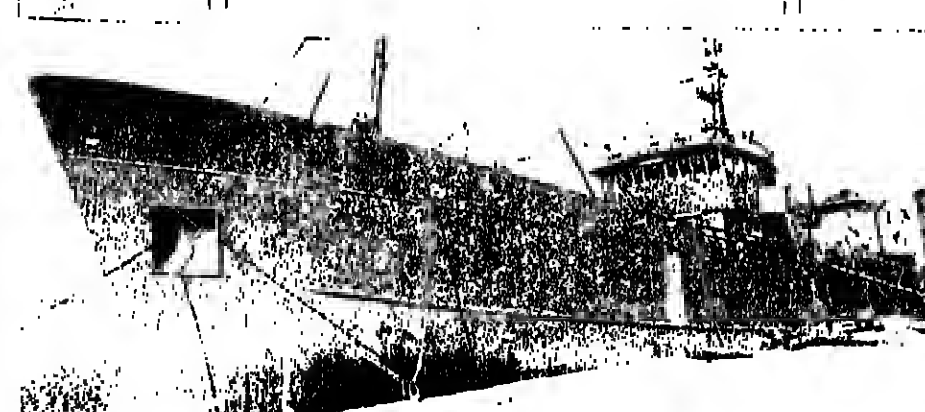


...and the biggest ever!

Under construction at Maaskant, Holland's first large beamer for three years. The stern gantry is insured against a beamer ban.

Maaskant, controllable from the wheelhouse.

The vessel is for Mr. Bakker of Den Helder and completion is expected by the autumn.



THE SECOND of the large purse seiners for the successful Tait family in Scotland is nearing completion in the Dutch yard of Maaskant. The first was built in Norway by Karmoy and both are in a design by Ulstein.

The 137 ft. by 30 ft. (42 by 9 metres) hull is fitted with six refrigerated brine tanks of 500 tonnes total capacity. Aft accommodation is for 14 crew. The main engine is a 1500 hp Winchman diesel turning a four-blade propeller.

Thrusters

Brunvoll 200 hp thrusters are installed forward and aft. All deck machinery is by Karmoy except for the Bjørholt triplex hauler.

The wheelhouse has twin radars, three sonars and a range of Simrad fish finders. A Decca 450 auto pilot is also fitted together with the usual radio equipment.

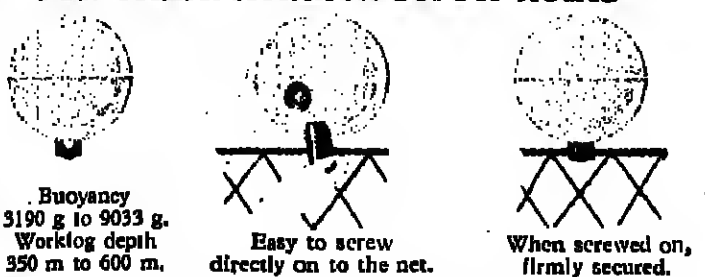
The new vessel, named the *Andra Tait*, has cost about £1.5 million. She will be shipped by Willie Tait and commissioned this summer.

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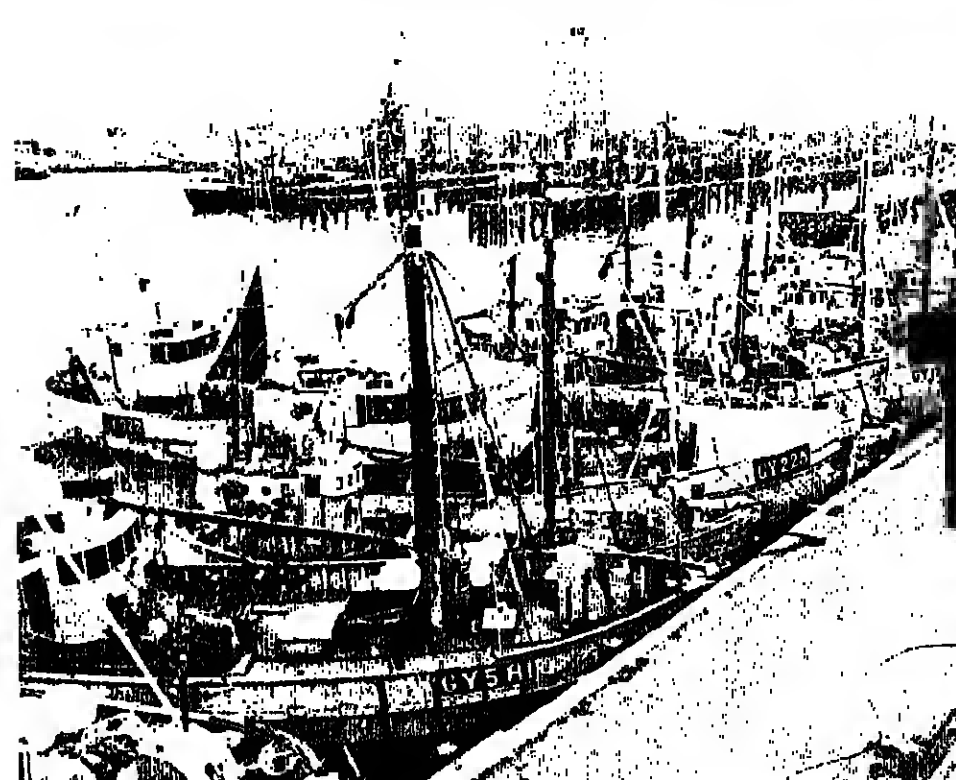
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NORTH SEA seiners at Grimsby — a big stake in near water supplies

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BATTLE OF THE TRAWLER PORTS...

AS THE British fishing industry adjusts to the changes brought about by wider limits, dwindling stocks of certain species, and the influences of the EEC, one of the most contentious issues is the future of the trawler ports.

Central to this is the argument between Hull and Grimsby over which should survive as an industry centre. Here, a Humber-side with a lifetime in the industry describes what has happened so far...

IN THE HALCYON days before 200-mile limits caused the biggest upset in the history of commercial fishing, Hull and Grimsby co-existed peacefully on the north and south banks of the river Humber.

Each port minded its own considerable business, and the "Yorkies" and "Grimmies" were apt to refer to their relationship as one of friendly rivalry.

For decades Hull flourished as an almost exclusively distant water port; whereas Grimsby prospered mainly on rich catches from the North Sea and middle water.

There was, admittedly, an element of overlap, in that Grimsby operated a substantial distant water fleet; but, by and large, the trading characters of the two ports developed as described.

Patriotism

Rivalry manifested itself chiefly in expressions of local patriotism and in fishing performances. Each port produced over the years many exceptional skippers, consistently successful in making high earnings for their employers and themselves.

Grimsby might admit, if pressed, that Hull were tops in volume for distant water fish; while Hull would perhaps concede that Grimsby headed the field as a "mixed" port with a clear lead in prime North Sea catches.

In short, the rivalry was a tribal thing, confined to good-humoured posturings and harmless boasting.

The "Yorkie" tribe and the "Grummy" tribe each artlessly



TOP pair trawling skipper Jans Bojan; one of Grimsby's heroes

proclaimed its own expensive-equipped water haul as England's premier fishing port — whatever the vague term may mean.

For well over a century the comfortable situation endured.

Then several things happened in disastrous succession. Britain signed the Treaty of Rome, committing herself to an EEC Common Fisheries Policy.

The Arabs raised their oil prices, resulting in many older trawlers being laid up.

A world-wide trend to 200-mile limits gathered momentum.

A final Cod War with Iceland was fiercely fought and lost. Britain was then expelled from Icelandic fishing grounds, so more trawlers and this time modern ships were laid up in Hull and Grimsby.

Bitter arguments have boiled up over fishing rights within the EEC, frustrating



COD AT HULL — will it be the last?

...but shots across the Humber could drive Britain's industry north

...but shots across the Humber could drive Britain's industry north

constructive planning and preventing — to Britain's near despair — any reciprocal fishing deals with third countries.

So now, on the Humber, distant water ships rust at their moorings and unemployment steadily decimates the ranks of fishermen and shore workers alike.

Hull and Grimsby are each fighting for their very existence as fishing ports, and the once-friendly tribal rivalry has hardened.

The first salvo of the conflict was fired last July from, so to speak, the battlements of Grimsby Town Hall.

Belligerent

It was plainly described as a joint statement by the Grimsby Borough Council, the Grimsby Fishing Vessel Owners' Association and the Grimsby Fish Merchants' Association. But the primness was belied by the belligerent title of the document: "Grimsby — Its Future as THE Major Fishing Port."

This manifesto listed Grimsby's purported advantages — geographical, commercial, educational and otherwise — as a fishing centre.

In so many words it gave notice to the government, the EEC, and the industry at large, that to consider Grimsby as anything other than the fishing port of the future would be unwise, if not downright misguided.

There was a short, shocked silence from north of the river — then outraged comments followed by a terse statement from the Hull Fish Merchants' Association that it was officially severing relations with its Grimsby counterpart.

A further, longer silence followed — until April this year — when the Hull Fishing Vessel Owners' Association launched a public counterblast to Grimsby's claim, strongly arguing the case for Hull as Humber-side's port of the future.

So then the chips were down, to the evident concern of Members of Parliament in both areas, who have since



SKIPPER Bill Brettall; consistently successful at Hull

been at pains to try to heal the breach; so far with no success.

There is heart-searching also among trade unions with members in each port. A case in point is the giant Transport and General Workers' Union, whose fish porter members in Hull have lifted the ban on landings of Icelandic wet fish, while their counterparts in Grimsby are still imposing the ban on the south bank.

Companies with fishing interests in both ports are doubtless in a similar dilemma.

In this respect, British United Trawlers (BUT), with a large foot in each camp, has recently touched off an explosion of indignation in the south bank port by announcing the transfer of its six Grimsby-based freezer trawlers to Hull.

Resistance

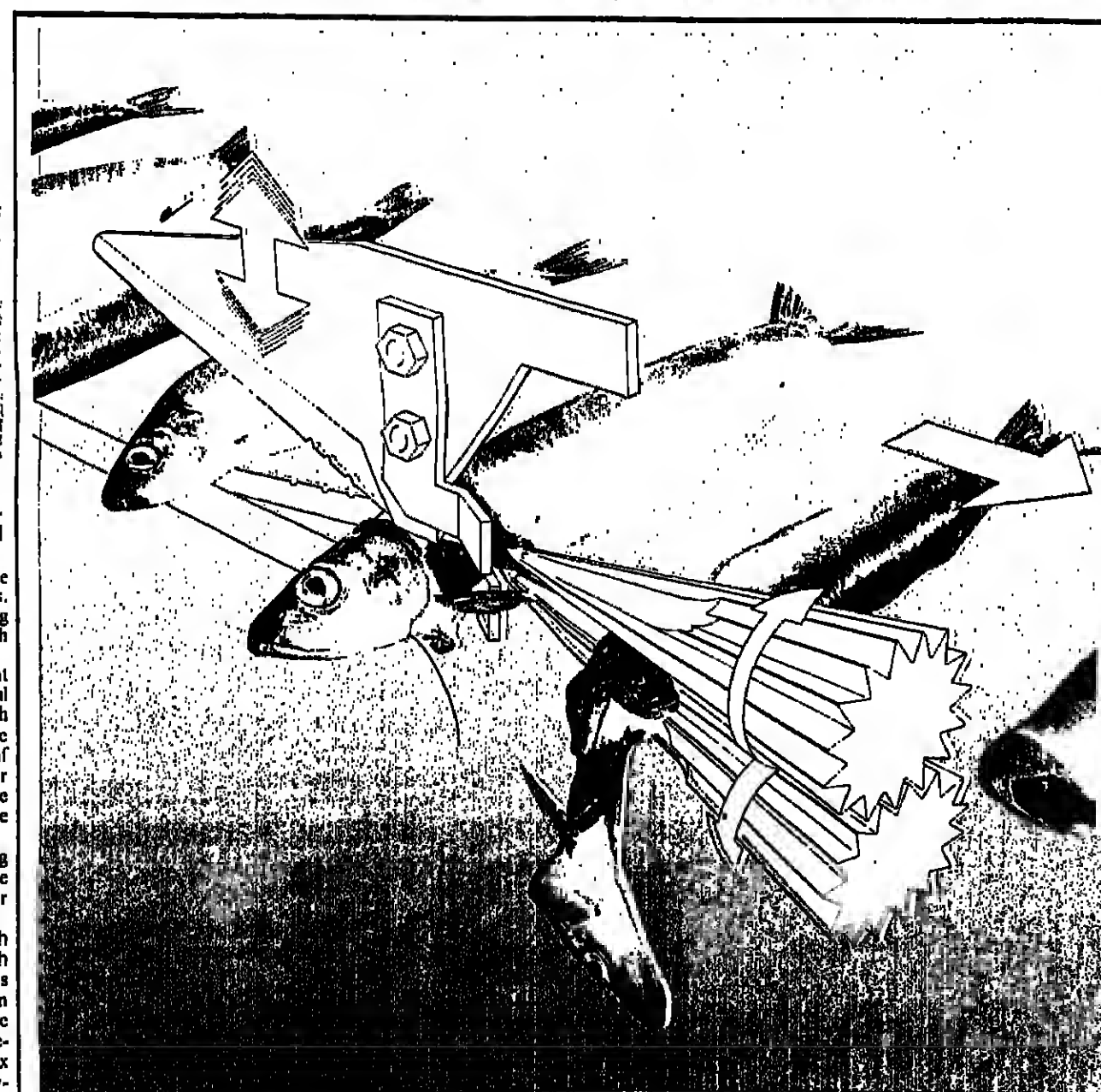
The two ports remain on a war footing, with the outcome still doubtful. But it may yet be resolved by outside pressures which threaten both.

There are nowadays, for instance, small but ominous indications of a possible shift in fishing emphasis from English to Scottish bases. There may be other such incipient nightmares for Humber-side lurking just below the uneasy industrial surface of things.

The emergence of any one of them could well vouch the "Yorkies" and the "Grimmies" in collective resistance, on the principle that if they do not hang together they will hang separately.



B.U.T. ship Goth is one of Grimsby's freezer trawlers transferred to Hull



Sometimes small differences in a machine cause big differences in performance.

The main point for processing small shoal fish like sardines — but also herring and mackerel — is a high speed performance of heading and absolutely exact and complete evisceration. Many systems have been developed achieving high capacity but not always a good product. BAADER solved this problem. On the new nobbing machine BAADER 465 the fish are headed as by hand nobbing shears, and the gills are engaged safely and completely removed without a jerk. To an optimum degree BAADER engineers transformed manual skill to maximum mechanical efficiency. The machine is capable of processing up to 350 fish/min including automatic devices for tail cutting and cutting the fish to length. Pay attention to the difference: speed does not always mean efficiency! With the nobbing machine BAADER 465 there is no difference between maximum capacity and quality. Our experiences gathered during several decades are your economical advantage.



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Nigeria trawl venture

ABERDEEN trawler manager Willion Dick (36) has taken over its fleet operations manager for Continental Sea Foods at Sapele, Nigeria.

Continental operate sixteen 80ft. (26.2 metre) freezer shrimp trawlers at a self-contained Nigerian base. There are large cold store facilities there, ice-making machines, a repair shop, dry dock, fuel tanks and food stores.

The company plans to move into deep-sea trawling off the West African coast. It is in partnership with the Nigerian government and has stations on the Ivory Coast.

FAO SLAMS 'DIRTIEST' HARBOUR

FREEZING and canning plants in Karachi are so dirty that it is almost impossible to process fish according to a team of FAO experts who visited the harbour recently.

The FAO team toured Pakistan, Bangladesh and India to examine the possibilities of a regional programme for seafood exports and improved communication between exporters and importers.

In its report to the Sind Agriculture Department, the team said that fish was unprotected against bacterial attack, the handling was poor and there was no proper method of quality analysis; nor were catches recorded accurately. The harbour was very congested and in need of extension.

"In short," said the experts, "Karachi harbour is perhaps the dirtiest and most unhygienic in the world."

The team noted, however, that the Sind Essential Supplies Control Act embodied hygiene rules as good as any in the USA. The only thing lacking was their enforcement.

Pakistan's fish exports amount to about Rs.300 million (£16½ million) a year. During July-February 1977/78 exports were worth Rs.254 million, down from Rs.281 million in the same period last year.

Now Chile packs sardine for South Africa

RISING CATCHES and expanding international markets for seafoods are two of the main factors in the rapid growth of the Chilean fishing industry over the past few years.

In northern Chile, at the ports of Coquimbo and La Serena, two enterprises have recently announced expansion plans for canning. In addition to exporting products to a dozen different countries, reports *FNI's* correspondent in Chile, the companies — Coloso and Camello — have also been building up sales to the local market.

Operating from Coquimbo, Coloso had exports worth US\$1.7 million in 1977, including canned jurel and Spanish sardines. Its main markets are the Philippines and Britain.

A sign of the times was the recent start of large shipments of sardines in tomato sauce to a buyer in South Africa. (As *FNI* reported last month, the Southern African pilchard industry is short of fish and has been looking around the world for stocks in order to hold its markets.)

The company operates a fleet of "goletas" that fish in coastal waters. The 120-ton purse seiners fish at night and seldom stay out for more than 24 hours at a time.

Jurel and Spanish sardine (jack mackerel and pilchard) abound in the northern coastal zone and are Coloso's principal canned products.

Rising demand for fish for direct human consumption is encouraging the company to plan for the day when all its fish will go into the food plant.

It is now preparing a large site near its present factory for a new cannery. The canning equipment was purchased from a South African manufacturer and is being installed.

..but 'loco' men's luck runs out

CAUTION by Japanese buyers has brought about the collapse of a short-lived boom industry in northern Chile. The industry was based on a local abalone, known as a loco. It found outlets mainly in Japan and caused a big upset in the world abalone trade.

Until recently, companies, such as Camello in the port of Coquimbo, exported large amounts of frozen locos to Japan, the world's main abalone buyer.

But many other smaller exporters jumped in. This, plus soaring loco prices, caused the cautious Japanese to back-off and cut their purchases.

The impact was disastrous for fishing people in northern Chile. Throughout the region, divers, helpers and others have lost their livelihood. Processing plant has shut down.

It is thought in the industry that the Japanese may be merely waiting for the price of locos to drop before coming back into the market.

If this is so, the netters are working, reports *FNI's* correspondent in Chile.

Production by early June was far outstripping demand. The region has a rich abundance of locos.

But dock prices have slumped. Some divers are keeping busy by marking crab pots and picking up sea squirts, mussels and other molluscs while waiting for demand.

VOICES FROM THE PAST

A NEW fishing museum has been opened this year in the old town of Umea in North Sweden, reports David Watkins.

On display is a collection of 19th century fishing boats complete with original gear, an exhibition of fishermen's houses, and hundreds of photographs of historic craft.

Recording

The museum is also busy recording the voices of veteran Swedish fishermen as they recall how things were when they went to sea at the beginning of the century.

They tell of their boats, their catches, the hardships they endured and the rewards they reaped.

Fishing history is rapidly disappearing with the men who made it, but the Umea museum intends to put as much of it as possible on permanent record.

US buying less meal

AT 16,508 short tons, production of fish meal in the United States in the first quarter of 1978 was almost exactly that of the same period last year. Production of fish solubles was 6,664 tons, compared with 6,528 in January-March 1977.

This year, however, there has been a substantial rise in US meal exports, from 983 tons in January-March 1977 to 6,298 tons.

Also reflecting smaller usage of fish meal in the American feeds industry, is a substantial drop in imported meal during the first quarter of 1978, from 22,603 tons last year to only 5,927 tons.

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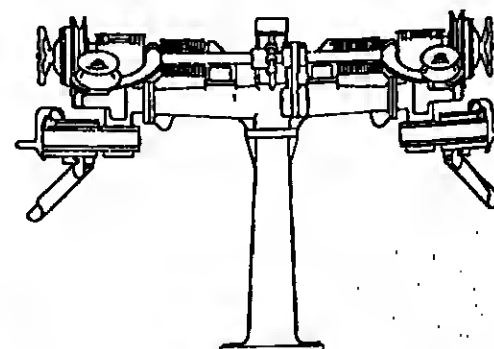
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BIG SCHEME FOR MALPA

WORK on Malpa harbour in Karnataka state on the west coast of India is due for completion by the end of 1979.

According to officials engaged on the project, this will be one of the big fishing harbours of Asia and could develop into an international port.

It will have five landing quays, two jetties, training walls for the entry channel, a slipway, boatyard and an auction hall, among other facilities.

The harbour will provide a base for some 23 vessels ranging from 18 to 28 metres long as well as 256 small motorised boats of ten to 14 metres.

Canadians need the herring jobs

THE British Columbia government wants to see Canadian-trained workers benefit from the lucrative herring roe fishery rather than allow 250 Japanese to come into Canada under temporary work permits.

The BC Ministry of Labour says that Japanese have been employed in 29 plants under work permits issued by the Federal Immigration Department.

The growing herring industry is now worth about \$130 million a year to the province.

Meanwhile, as reported last month,

there is concern in the industry that another federal agency — the Foreign Investment Review Agency (FIRA) — has not been strict enough in its enforcement of already weak regulations governing foreign investment in the industry.

It has been pointed out that Japanese companies have not found it difficult to gain entry into fishing on the Canadian west coast.

Even small Japanese trading firms and wholesalers have been able to establish local Canadian agents, thanks to licence fees (\$50 for fish buyers and \$100 for processors).

It is alleged that cash advances to credit-starved local processors or fishing fleets are also being used by the Japanese to secure first rights to production.

Among Japanese interests with (or planning) a major stake in Canadian fishing are Nishiro, Sumitomo Seifun (a Western Canada Seafood) and Tsukiji Uoichiba.

A similar problem is worrying fishing industry people in Alaska and the Pacific north-west states of the United States, where several foreign companies have been buying their way into local industries.

But legislation to restrict foreign ownership of US-based vessels and processing plants.

A bill which should pass Congress by late summer has been proposed by Representative Les AuCoin of Oregon. This would restrict the foreign share in boats and in processing to 25 per cent.

Japanese involved in 54 countries

JAPANESE companies are engaged in fisheries, fish farming and processing joint ventures in 54 countries.

The Japan Fisheries Agency says that although foreign joint ventures account for only a small share of the total Japanese catch, this will rise appreciably in the future. The growing contribution will be needed to make up for the drop in supplies caused by extensions of fishing limits.

The Fisheries Agency carried out its study of joint ventures to learn the direction Japan will have to take in fishery diplomacy and how fishing businesses may change.

More firms

According to the report of the study, Japanese companies had set up 192 firms jointly with foreign interests. This was an increase of 20 over the total in the previous survey of April 1977.

Capital of local subsidiaries aggregated US\$115 million. Of this \$68.7 million was put up by the Japanese partners. Of the 192 ventures, 71 were for catching bonito, skipjack, tuna and shrimp, 90 were in freezing and processing and 31 in aquaculture.

By area, 35 companies were engaged in processing in North America. Twenty were trawling for shrimp in Asia and Oceania. Six were working off Africa and 28 were in farming, mainly eel, in South Korea.



Drying fish under the familiar palm thatched hut in Sri Lanka

SRI LANKANS WANT MORE CATCHES TO DRY

We've Always Built A Better Boat!

FOR THOUSANDS of Sri Lankans, dried fish is a delicacy eagerly sought and deeply enjoyed. Commonly called "rice putter," it is part of a fixed tradition on the island reaching back to the 17th century.

Over the years however, taxes and levies on salt have caused the decline of what was once a major industry. Today Sri Lanka produces around 500 tons of dried fish a year — barely 20 per cent of domestic demand. This is due mainly to improvements in storage, transport and distribution which have boosted consumption of wet fish, leaving hardly any surplus for drying or smoking.

To meet the shortfall, Sri Lanka's largest consumer community complex — the Co-operative Wholesale Fishermen (CWF) imports dried fish from India, Pakistan, Aden, Dubai, Arab, Amman, the Maldives, and Singapore. Imports of dried fish last year rose by nearly 20 per cent over 1976. They are now averaging about 1,500 tons a year.

But the Sri Lanka Ministry of Fisheries, working with the Industrial Development Board, is trying to boost domestic production of dried and smoked fish through various incentives. These include bank loans and technical advice.

Local fishermen supply a variety of species for preservation using the traditional curing method. Fish supplied to curers include mackerel, pomfret, horse mackerel, dog shark and skipjack (from inland waters).

Methods

In Sri Lanka fish are cured commercially by one of three methods: drying without using of salted fish, on the hot sands of beaches in the Dry Zone, small fish are dried without any treatment or addition of salt. But this method has a limited application.

Dry curing of salted fish is done in the dry seasons and is thus dependent on the weather.

For wet curing, the fish are cleaned and then placed in wooden barrels or glazed earware jars containing

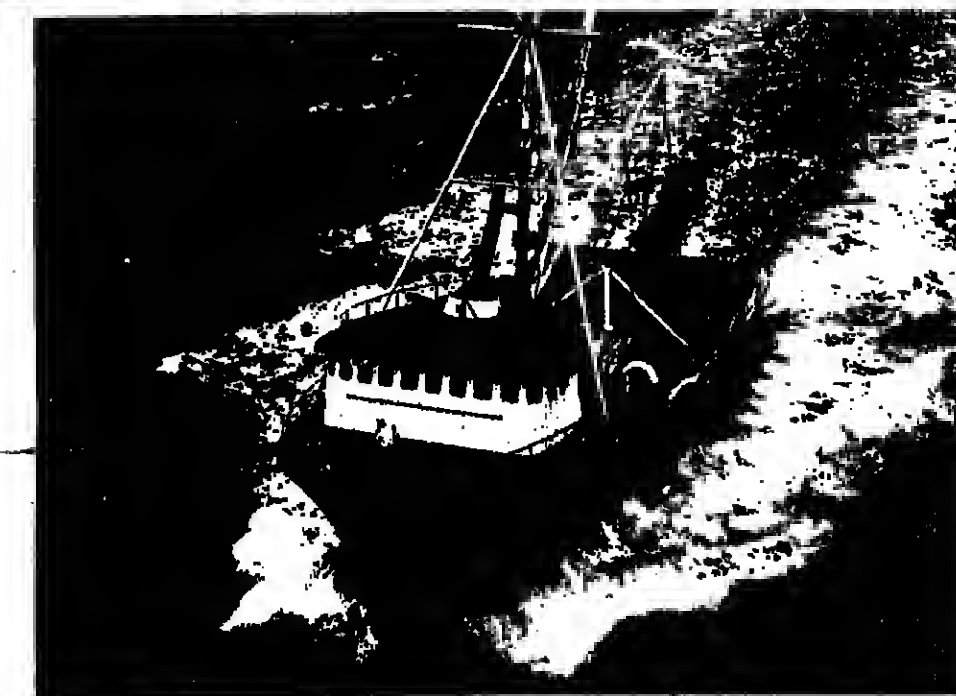
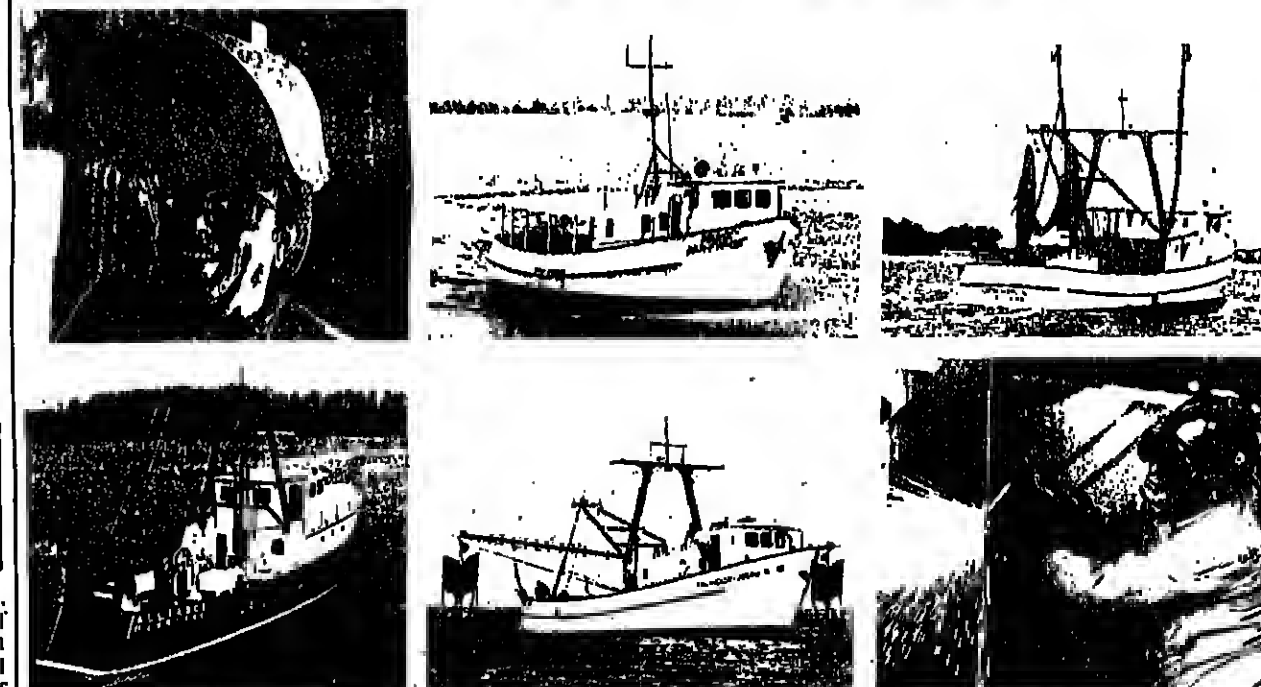
report by
NALIN WIJESEKERA

saturated brine. In most cases, the dried fruit pulp of *Lavina canthoga* (known locally as "goraka") is added to the brine in a proportion of about two per cent of the volume of fish. The active agent in goraka is an acid which makes pickled product of the cured fish.

Maldivian fish

The chief smoked product is Maldivian fish. This is made on a very small scale as the price of the local product is higher than that imported from the Maldives Islands. The method is applied only to skipjack tuna. The fish are cleaned, boiled and smoked before they are sun dried. The process gives a hard cured product which is in great demand as seasoning in food and as an ingredient in local sauces and savouries.

Aware that many of the methods of preparing dry fish are antiquated and unhygienic, Minister of Fisheries Festus Perera has asked the newly established Fish Technology Institute to investigate how these might be improved and modernised. These could include provision of more sanitary curing yards, clean utensils, use of clean and graded salt, and use of fresher raw material together with hygienic methods of refrigeration and storing.



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Salmon plan for Chile

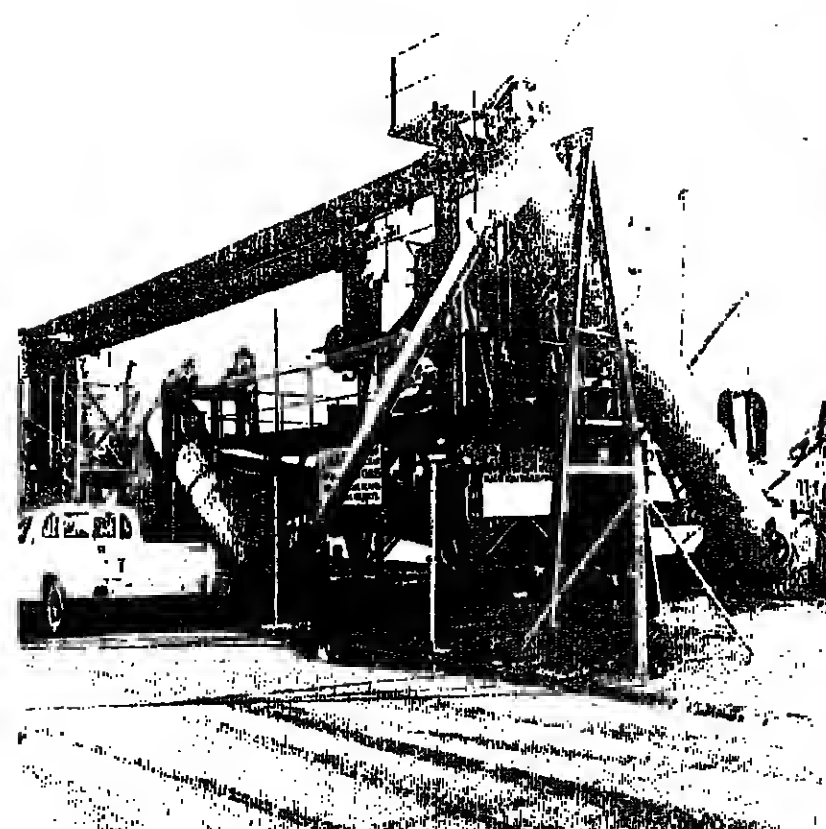
ANOTHER Japanese company is moving into salmon culture in Chile. Nishiro Gyogyo, one of the fishing giants, has gone into partnership with local interests to form Empresa Pesquera Nishiro Chile.

Work will start in September on the construction of a hatchery, ponds and other facilities for a ranching operation based on the introduction of Pacific salmon into southern waters.

Nishiro plans to airlift salmon eggs from Japan to the Chile hatchery.

Nishiro's involvement in salmon culture goes back to 1974 in Japan. In Chile, experimental work over many years indicates that northern salmon should survive and thrive in southern waters.

One strong stimulus to ventures outside has been the cut in Japanese salmon and sea trout quotas in recent negotiations with the Soviet Union.



ON THE DA GAMA JETTY: The system at work

FOOD FISH: SAFE PUMPING SYSTEM

**product
news**

METHODS • GEAR • EQUIPMENT
• PLANT • COMPANIES

SEVERAL Southern African purse seiners are now preserving their catches in refrigerated or chilled (iced) sea water. This development, in South West Africa particularly, results from the sharp drop in quota-regulated pilchard catches. And, as MICHAEL STUTTAFORD reports, it is encouraging innovations ashore in the methods of handling the incoming fish.

IN AN EFFORT to cause the least possible damage to RSW or CSW preserved fish during offloading, and at the same time avoid polluting the harbour with blood water, a South African fishing company has devised a mechanical system operating under low vacuum.

The company, Da Gama, has its factory at Hout Bay near Cape Town.

One of the Da Gama boats, the 23-metre *Oceanus Sapphire*, is fitted with a tank in the port pocket of her hold. The tank can accommodate up to ten tons of fish in ice and water agitated by air from a blower in the engine room. The fish are directed to the tank's manhole by a simple gate on the dewatering screen through a 250 mm hose.

On the jetty, drawing vacuum from air lines used by adjacent dry offloading plant, are two totally enclosed unimoles screw conveyors linked by a barometric leg. The first conveyor is under vacuum; air is drawn off at an outlet near the top and the vacuum is maintained by the barometric leg.

Da Gama may install a vacuum pump or blower to make the system independent of the dry offloading plant.

In pockets

The flights of the screws are enclosed so that the fish are conveyed in pockets of water.

Built by Rock Engineering at Cape Town, the conveyors are 760 mm in diameter. The first conveyor is 8m long and the second 4.3m long.

The system has no valves and is virtually maintenance-free. Because the suction hose enters the bottom of the first conveyor at jetty level (in subsequent installations it may even be below jetty level), a relatively low vacuum is required to raise the fish from the tank in the boat.

This is unlike dry offload-

ing systems, which have to raise the fish to a considerable height to reach a cyclone which separates fish from air and drops the fish on to a conveyor. Because the vacuum is low the velocities attained by the fish are relatively slow. The factor, coupled with the absence of valves, minimises damage to the fish.

Out first

Before pumping starts, the conveyors and the barometric leg are partially filled with water. Chilled water in the tank is pumped out first, usually with small quantities of fish. Water emerging from the second conveyor is pumped to the boat's conventional hold for discharge.

The hold and the tank are washed when the boat is travelling to the fishing grounds. Thus, pollution of the harbour, strictly prohibited in South African law, is avoided.

Before the suction hose starts pumping dry fish, water from the system is directed into the tank to assist the flow of fish in the nozzle.

The fish pass through the conveyors in pockets of accompanying water and sink through the barometric leg. They spill onto a screen from the outlet of the second conveyor, the water being pumped back to the boat.

From the screen, the fish drop into bins containing ice and clean water. The plant on the Da Gama jetty pumps water from the boat's tank at 110 tons an hour. Fish is offloaded at about 30 tons an hour. This is adequate for Da Gama's needs.

Strapping machine

THE Gordian OL-35 Marine polypropylene strapping machine has been introduced by Gordian Strapping Ltd. for the fishing industry.

The semi-automatic OL-35 features sealed electric motor and alloy and stainless steel parts. It is designed for use in packaging operations where a more sophisticated system than manually-operated tools is needed.

The unit, suitable for factory trawlers and fish processing plants, tensions and seals automatically. The operator has only to feed the strap around the package.

South African scheme avoids pollution

Now, new one-ton line hauler

SOUTH WESTERN Mechanised Fishing has extended its range of line haulers with a new one-ton model. This has several new features, the main one being the use of stainless steel for the hauling sheave.

Stainless steel was chosen by the British firm to give the hauler a long maintenance-free life. The two sides of the sheave are power formed and then hardened so that there is minimal wear and no change in dimensions through corrosion.

The stripper knife is also of stainless steel. Very small clearances between this and the sheave allow easy handling of small ropes.

A retractable spring arm is available as an option to enable the hauler to work satisfactorily in shallow water down to three fathoms and it helps maintain a continuous tension in rough sea.

The hauler has a continuous rating of 1000 kg and a maximum rating of 1700 kg. Ropes between 5 and 20 mm in diameter can be handled without adjustments. Speeds up to two metres a second are possible.

Deck housing

Total weight of the hauler plus hydraulic motor is 120 kg which increases to 200 kg when the optional deck housing is included. This latter unit is constructed from hot dip galvanised mild steel and gives a hauler centre height of 24 inches.



The hauler 1,700 kg maximum

LIFERAFT SAVES 11

TWO ten-man RFD inflatable liferafts saved the 11-man crew of the British side trawler *St. Luke* when she sank in the North Sea in May after an explosion.

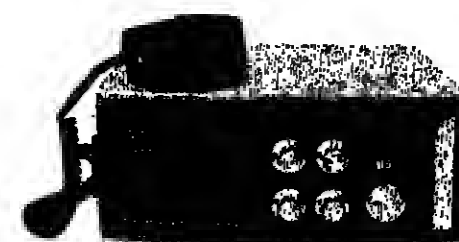
"We were hauling in the gear when an explosion lifted the ship," said Skipper Basil Howler. "It was caused by a mine or a bomb — something like that. We abandoned ship almost immediately."

"We launched two liferafts. It was very calm and visibility was about half-a-mile. There was no panic although the men were shaken."

The 350-ton *St. Luke* was based on the English east coast port of Lowestoft. Her crew spent nearly six hours in the two Type 100M liferafts before they were picked up by a German yacht.

New...

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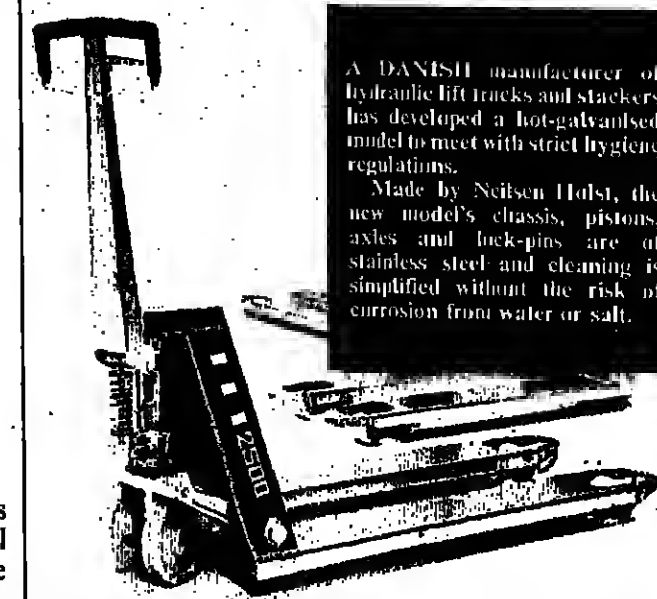
NECO Communications of Dorset, England, is distributing the Dancom RT408 VHF radio telephone in Britain. The system is now generally available throughout the world.

These radio telephones feature 99 channels (55 international and up to 44 private frequencies), dual watch, selective calling (Selectall) and full duplex capabilities.

Despite all these features, the units remain compact and simple to install say the distributors. Their small size enables them to slot into any crowded wheelhouse or be fitted as a bridge station on larger vessels.

They may be purchased for semi-duplex, two-aerial duplex, or single aerial duplex operation.

They can also be ordered with a Selectall unit fitted inside. This is said to lead to greater safety, quicker and more reliable communication. This new system, which is being used increasingly by British and European coast stations, has now been standardised throughout Europe.



WORLD NETWORK

ELECTRONIC Laboratories Ltd., a member of the Brooks Group, have taken over the marine side of Cullinoy Electronics Ltd.

This will expand the existing market for Cullinoy products by using Electronics Laboratories' world distribution network.

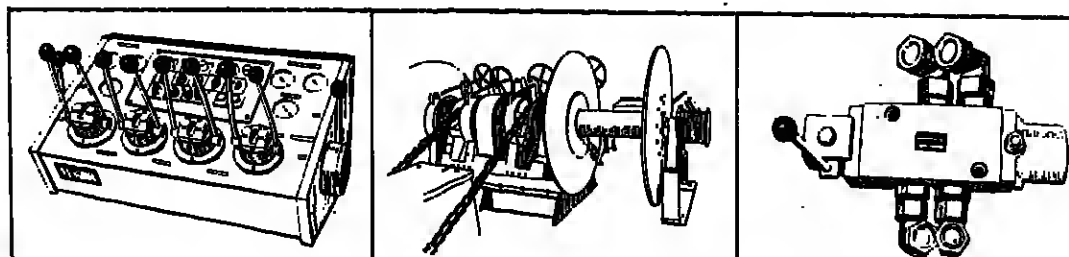
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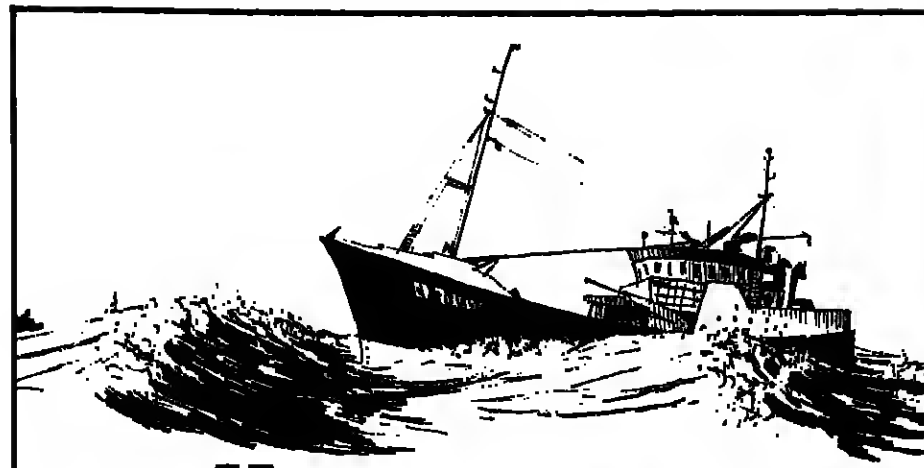
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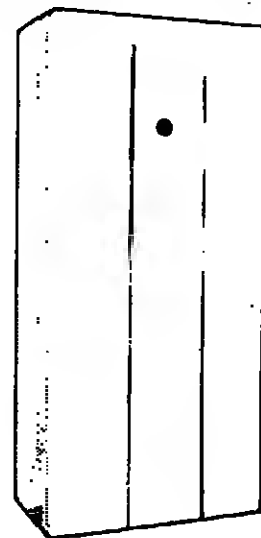
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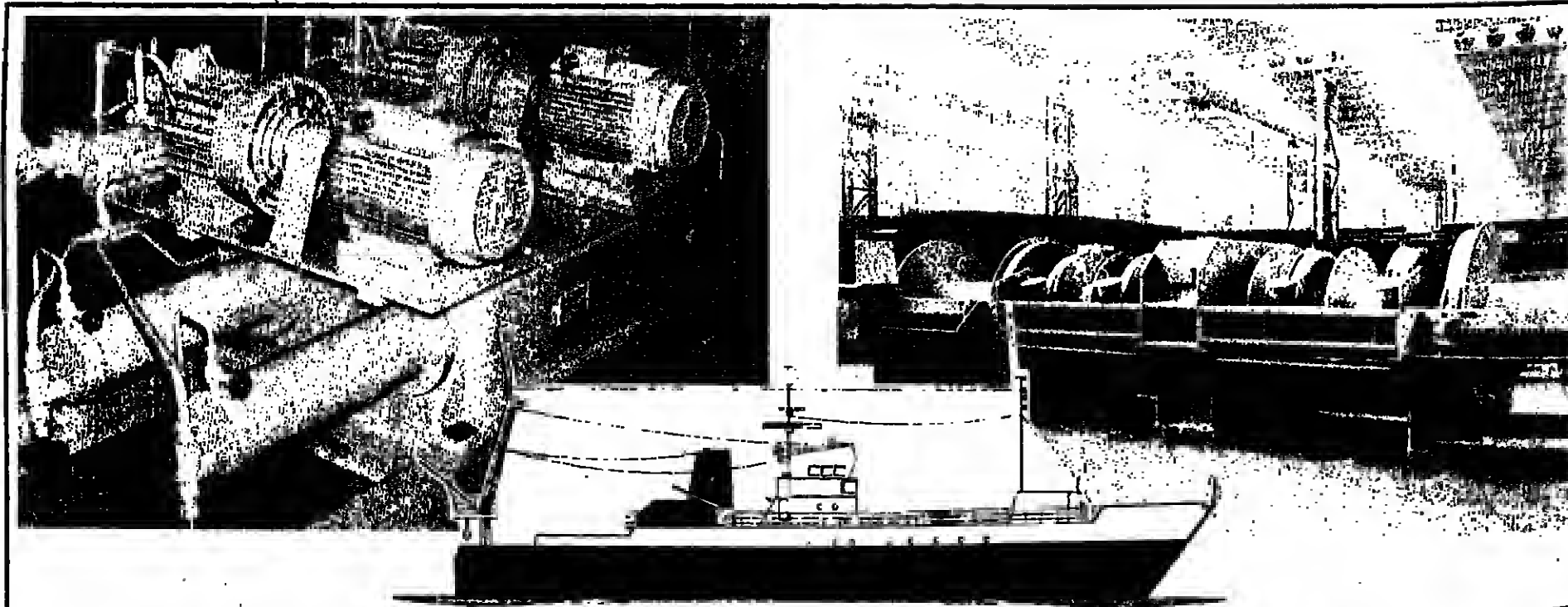
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All leading German fishing companies: Pickenpeck, Hanseatische Hochseefischerei, Nordsee Reederei and Scrombus preferred "BRUSSELLE" equipment and so did NORDSTERN HOCHSEEFISCHEREI for their latest wet-fish sterntrawler "SONNE" equipped with:

The newest version of a 4-ram electro-hydraulic steering gear "Brusselle" of 5.1 ton-metres. Compactly designed with built-in upper ruddershaft carrier and piggy-back mounted pump units. All pipework being finished at delivery, the installation on board is reduced to the electric connection toward the wheelhouse for the solenoid actuated electrovalves of the pump units.
Owners' comments: *The most secure technique we can rely on.*
And Yerd's (Rickmers): *It saves us plenty of time in installation!*

The electric 6-drum trevlinch "Brusselle" Patent with a maximum pull of 32 tons on main drum and 58 tons on bare drum winding. Main drum capacity: 3000 m. of 28 mm. dia. Auxiliary drums fitted with friction clutches, pneumatically remote controlled, allowing engaging or disengaging with rotating main shaft.

Meindrums with remotely controlled self-releasing brakes with fine regulation.

Winchdrive by electro-motor of 380 hp. thyristor-controlled. The winch equipment is completed by a "Brusselle" electric netreel winch with a storing capacity of 12 cu. m.

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Pumps that kept Eleni oil from the fish tanks

BECAUSE it had a newly-installed pumping system, the big government fisheries laboratory at Lowestoft was protected from contamination when a Greek tanker lost her oil cargo in a North Sea collision.

The tanker *Eleni V* was out in half in the collision. The stern section was towed away but British officials then made a long and laborious job of getting rid of the bow section.

Oil lost from this section polluted beaches along the English east coast and could have endangered fish specimens in the laboratory. But it

recently installed a pump system developed by Sea Water Supplies Ltd. which obtains a continuous supply of clean, high quality water from below bench level.

Key to the system is a standard two-inch self-priming Alcon pump from British Labour Pump Company. This pump has been adapted to combat sea water corrosion and cope with 24-hour day operations.

Out in phosphor-bronze, with a corrosion-resistant bronze impeller, the Alcon pump is powered by a 5 hp electric motor and replaces the 15 hp non self-priming

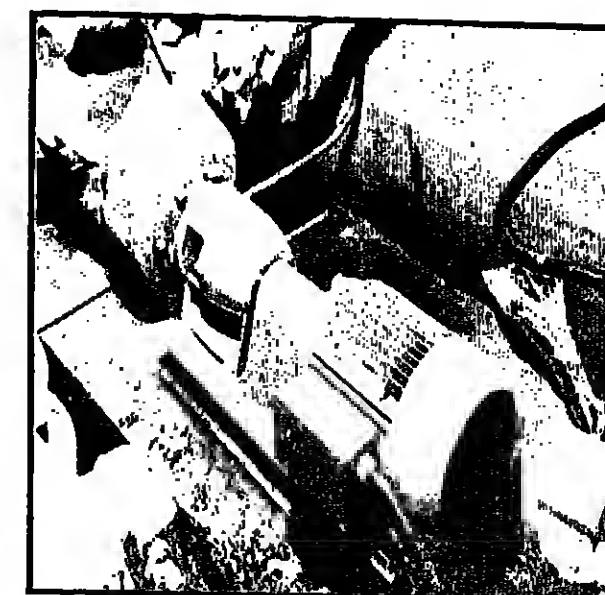
stainless steel pump previously installed.

It supplies 140,000 gallons a day to the fish breeding tanks 50 ft. above on the top of Lowestoft's Pakefield cliffs.

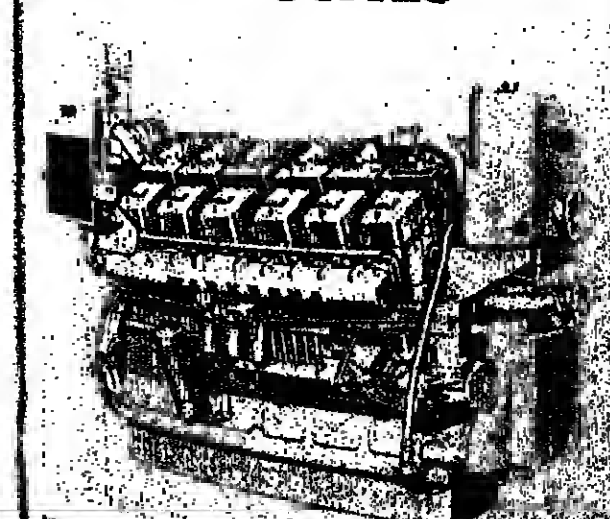
The pollution-free water supply comes via a series of six wells up to 10 ft. below bench level. Water is pumped through the sand, which acts as a natural filter.

In the previous pumping system from an inlet on the sea bed muddy water had to settle out in storage tanks before it could be used. Supply was also irregular, fluctuating with the tides, restricting the laboratory to only 6,000 gallons of usable water a day.

The Lowestoft Laboratory breeds several species including cod, turbot plaice and sole.



NEW ENGINES



NEW six and 12 cylinder marine diesel engines of 232 pin bore with maximum bhp of 1,021 and 2,042 at 1,215 rpm have been announced by Waukesha Engine Division, Dresser Industries Inc. The engine models, of 3,335 cu. in. (54.6 litres) and 6,670 cu. in. (109.3 litres) displacement, are available in either turbocharged and intercooled or naturally aspirated configurations and are designed for prime electrical power, or main propulsion. Typical standard equipment will include heat exchanger and oil cooler with removable tube bundle for ease of maintenance. Pre-lubrication system, shielded high pressure fuel injection lines, and variable fuel injection timing.

PROPULSION PACKAGE

RUSTON DIESELS has introduced a range of propulsion package machinery incorporating the 6AP230 and RKC engines in association with Ulsin gearbox, shafting, controllable pitch propeller and remote control equipment.

These pre-engineered packages encompass a power range up to 4,200 bhp at 1,000 rev./min.

The 6AP230 engine introduced in mid-1977 is derived from the Ruston AP2 engine, by increasing the cylinder bore size from 203 mm to 230 mm. The engine

is now rated at a maximum output of 1,440 hp at 1,000 rpm.

RKC engine

The RKC engine is a 10 in. bore x 12 in. stroke unit built in 6 inline and 8, 12 and 16 cylinder Vee form with an output of 262 hp/cylinder at 1,000 rpm alternatively 250 hp/cylinder at 900 rev./min. or 235 hp/cylinder at 750 rev./min.

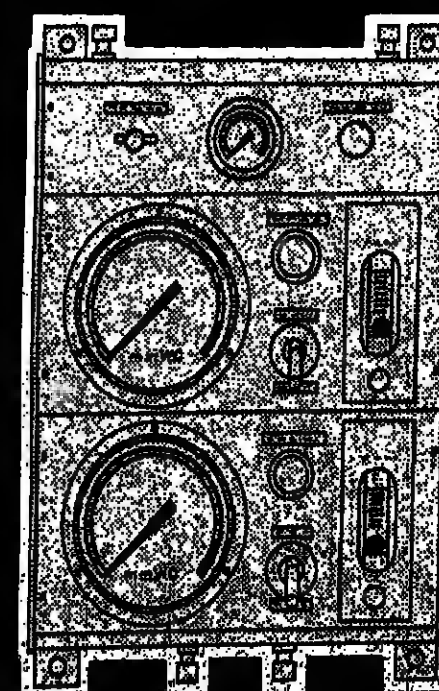
Since the introduction of the basic engine type in 1947 it has been

successfully uprated and extensively applied as a marine propulsion and Manne auxiliary unit.

The Ulsin equipment is the Norwegian company's 220 AGSC and 600 AGSC.

In addition to the standard supply of reduction gearbox with isolating clutch, tailshaft, sterntube, stern gland, and controllable pitch propeller, a range of optional extras are available, including the design and supply of propeller nozzle, shaft disc brakes, special propellers, and pneumatic or electric control systems, to suit customer requirements.

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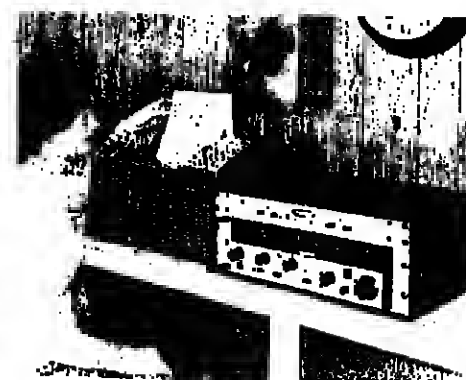
ON THE RIGHT WAVELENGTH

New telephony receiver

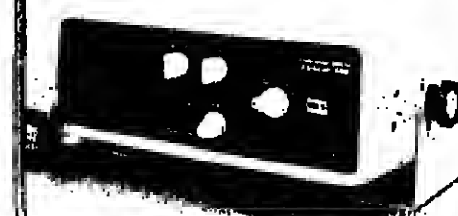
EDDYSTONE Radio Ltd., part of the Marconi group, has introduced the 1838 series of m/f/hf telephony receivers developed from the 1837 series to meet the need for a simple-to-use skipper-operated system.

The 1838/1 is the basic equipment which provides am and ssb reception in the 1.6-30MHz frequency range, while the 1838/2 provides additionally for cw (morse) reception, and if greater frequency coverage is required, the 1838/3 operates over 100kHz-30MHz in am, ssb and cw modes.

Eddystone says that the series has high stability, digital frequency display, continuous stepless tuning, advanced design and simplicity of operation.



NEW SSB radio telephone



A POWERFUL 150 watt solid state SSB radio telephone that covers the two to 23 range with no frequency gaps. It has been introduced by Santa Clara CA Intech Inc.

Called the Marloer 1600, the unit's wide coverage allows clear voice contact over all marine HF frequencies. It has 24 Simplex or 12 Semi-Duplex channels.

The 1600 is rated at 100 per cent duty cycle which permits continuous voice transmission over extended periods.

NEW emergency alarm

MORROW International Inc. has introduced a fully synthesised marine HF single side band transceiver equipped with an automatic emergency channel selector and channel alarm. The alarm gives out an alternating two-tone signal that can be picked up 24 hours a day. The SSB 150/40 has 39 channels, a frequency range of 2MHz to 23MHz and 150 watts of amplifying power.



BANGLADESH JOINT SHRIMP VENTURE

JAPAN'S giant Telyo Fishery Company is to participate in a new joint venture planned for Chittagong in Bangladesh. Another Japanese company involved will be the Mitsui trading group.

The Bangladesh government

is expected to approve the venture which will link the Japanese with several local investors.

The company will be known as Bengal Fishery Ltd. and its initial capital will be 4.9 million taka (£175,000).

It will be the first Japanese joint venture operation in Bangladesh.

The company expects to acquire eleven 250-ton shrimp trawlers over three years. Four will be bought in the first year using money borrowed from the Overseas Fishery Cooperation Foundation.

Experimental fishing off Bangladesh has indicated that a catch of about 80 tons of shrimp per trawler per year was possible. Catches will be frozen at sea and exported to Japan.

By the early 1980s it is hoped that the company will be exporting about 1,000 tons of product a year.

Talyo's yearly imports of shrimp presently total about 4,000 tons.

Norway satellite watch

NORWAY's 200-mila fishing limit could be under satellite surveillance by 1983.

The Troms satellite-telemetry station has assembled a 2.2 million kroner antenna that will record data from three American satellites to be launched in July/August this year.

One of these, Seasat A, is capable of registering vessels from a height of 900 km. This could mean a large saving for the Norwegian coast guard and defence ministry by helping to reduce conventional patrolling.

Seasat A is an experimental satellite with advanced radar systems that can register the strength and direction of wind and objects such as ice and shipping.

Modern fishing in a 12-week package



Chief Oboroh (left) is permanent secretary to the Minister of Fisheries in Nigeria. Victor Igbu, Akhavanu Akinde and Eniola Dapula are government fisheries officers in Nigeria. They are seen here at the WFA course in Hull watching an instructor make a model net.

package

A British course tailor-made to the needs of fishery officers

Topics discussed include the role of marine research, fish migration and fish behaviour in relation to environmental conditions and fishing gear. There are also lectures on population dynamics — the ways in which fish stocks vary due to pressure from fishing and natural causes.

The fish detection part of the course also lasts a week. It includes lectures and practical demonstrations using typical fish-finding electronic equipment.

It is intended to give students a grounding in the theory and operation of modern echo sounder and sonar equipment. There is also reference to the use of such equipment in fish resource surveys.

Full use is made here of the WFA's comprehensive acoustic fish detection training aids.

Four-week insight

Animal production, nutrition and distribution. Visits also made to a wet fish shed, a smoking house, a processing factory and fish meal plant.

The next two weeks are concerned with fishing gear. The first week is spent studying basic theory of gear construction, shaping and rigging, and practical net making. Students then move to the WFA Flume Tank for a week-long course in fishing gear technology.

Full use is made of the Flume Tank and the students spend much of their time carrying out trawl rigging experiments there.

Instruction is also given in other fishing methods, including gillnetting, longlining and seining.

Marine science

Marine science is the next area covered. This part of the course lasts a week. Topics of oceanography, marine biology and fish behaviour of direct relevance to commercial fishing in changing countries are

STUDENTS from Nigeria, Ghana and Ecuador recently attended the latest of the British White Fish Authority's 12-week courses in technology and management. The courses take place in Hull and this was the third of them.

"They are designed," says the WFA, "to give staff of government fisheries departments a general grounding in the many aspects of fisheries technology and management that together form a modern fishing industry."

"The course is intended mainly for graduates from developing countries who are in posts, or are intending to enter posts, in government fishery administrations or development organisations. It is equally suitable for fisheries extension officers."

It is in fact a very useful introduction to some of the more complex features of modern fishing. One of its prime advantages is the way it can be related to the needs of the individual's national fisheries programme.

During the 12 weeks, students cover such topics as fishing vessel construction, fish handling and preservation, gear technology, marine science, fish finding and resource survey techniques, business management, resource management and marine fish farming. Content and emphasis can be varied.

Boats and design

The vessel construction part of the course lasts a week. Students discuss construction and design from the initial conception through specification and tender stages to the various boat building methods.

Apart from attending lectures and practical demonstrations, the students visit a boatyard.

Fish handling and preservation is covered in an intensive ten days with much practical work.

Students learn the correct handling of fish, quality assessment methods, filleting, freezing, smoking, canning.

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To: The Training Manager, White Fish Authority, Industrial Development Unit, St. Andrew's Dock, Hull, HU3 7SW, England. Telephone: 0482-27837. Telex: 527261.

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"Please send me more details about the Fisheries Technology and Management course."

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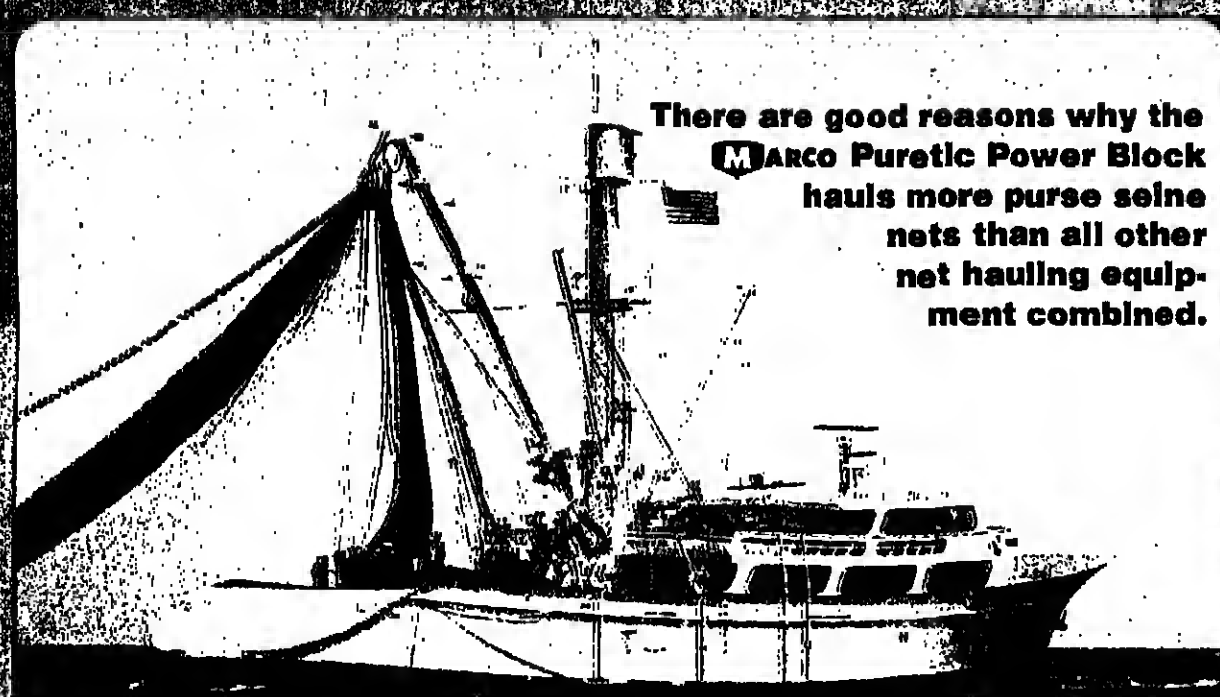
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There are good reasons why the Marco Puretic Power Block hauls more purse seine nets than all other net hauling equipment combined.

- ☐ Since Merlo Puretic and Merco created the revolution in net hauling 22 years ago, more than 15,000 vessels worldwide have been equipped with Merco Puretic Power Blocks.
- ☐ Others have developed more complicated deck-mounted gear to compete with Merco's simple straightforward system, but the Puretic Power Block is still best for virtually all applications.
- ☐ The Puretic Power Block allows the net to fan out and self-adjust during hauling, producing less strain and wear on the net than any other system. Corke are never damaged. Net is hauled from any direction. Deck is not cluttered with net transporting systems used with deck-mounted systems.
- ☐ The Puretic Power Block provides the easiest and simplest method for stacking the net.
- ☐ Merco Blocks with patented Merco Powergrip can control net slippage to suit the requirements of any fishery.
- ☐ The Merco Block with Powergrip hauls nets with less wear and squares up the net better than deck-mounted systems.
- ☐ Merco has a Power Block to provide any required line pull and hauling speed.
- ☐ Merco leads in nine out of ten purse seine fisheries because it has more proven models of net handling equipment (15 standard models) to choose from.
- ☐ Nearly all of the world's large tuna seiners, regardless of where they are built and where they are fished, use the Merco Puretic Power Block.
- ☐ The Power Block is only one part of a modern hydraulic seine fishing system. Merco is better equipped and more experienced to provide the best system for new construction. Merco assists both owner and shipyard.
- ☐ Merco has excellent factory backup and the most extensive worldwide field service in the industry.
- ☐ No machinery manufacturer knows more about purse seining than does the company that developed the Power Block — MARCO.

FISHERIES TRAINING

Vessel designers course for the Far East

A TWELVE-WEEK course in fishing vessel design in Asia and the Far East is to be held in Bangkok, Thailand, in the last quarter of 1978. The course is being jointly organised by FAO's Department of Fisheries and the Norway Co-operative Programme. It will be conducted in English.

All participants will be nominated by their governments, and so no applications should be made directly to FAO.

Those with suitable qualifications (university or technical college degree or diploma in engineering, naval architecture or boat design) should approach the relevant government authority in their country.

FAO and the Norway Co-operative Programme say they are organising the course because such instruction in naval architecture, engineering and shipbuilding relative to fishing vessels is rarely available in developing countries.

It is therefore difficult for most developing countries to obtain suitably qualified nationals in this field, despite the relatively high

proportion of gross national income derived from fishing.

The course will consist of nine or ten two-hour lectures a day. The rest of the time devoted to practical drawing work.

Participants will be expected to prepare a complete series of design drawings for a fishing vessel, the layout and construction method of which will be chosen to suit the requirements of their own countries.

The course will be directed by an FAO consultant naval architect with a co-director from the host country.

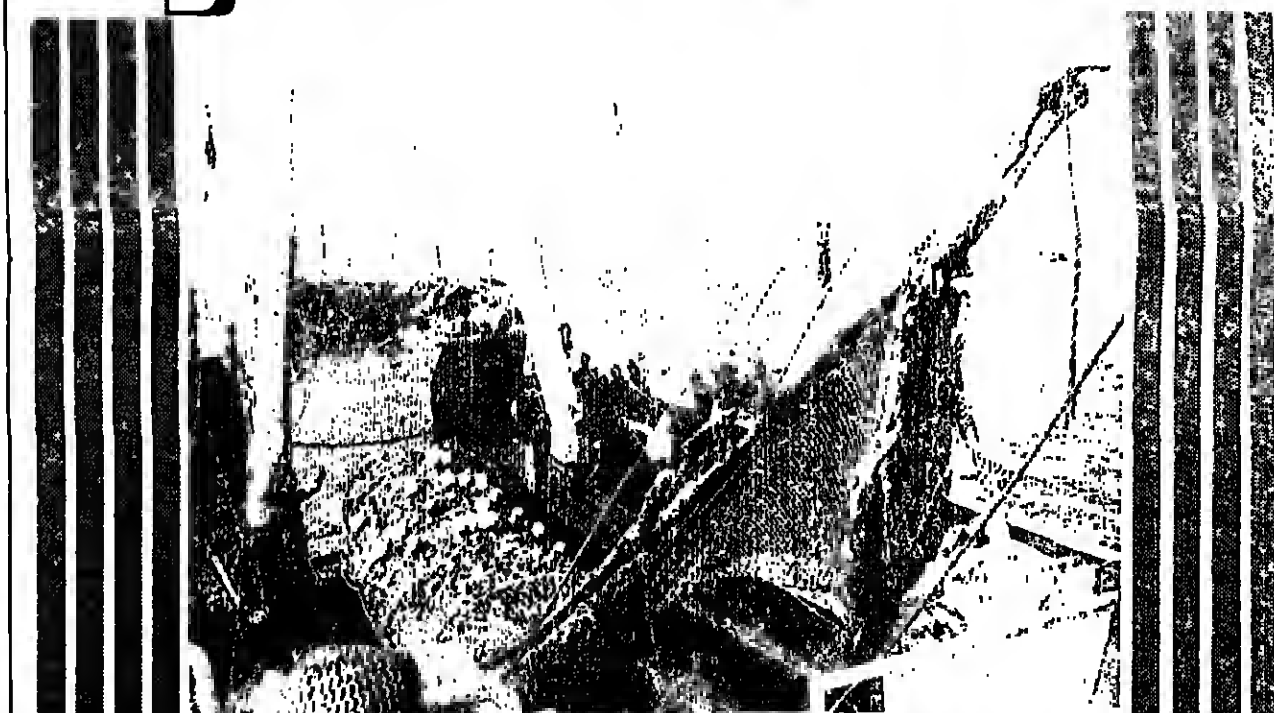
Permanent teaching staff, in addition to the course director, will include one senior lecturer, so that at least two instructors will be available at all times to give individual help to participants.

Guest lecturers will cover the varied technical specialities of the course.

About ten working days will be devoted to study visits and short fishing trips to demonstrate the practical aspects of vessel design, construction and fishing methods.

A similar training course is planned for Latin America in 1979.

engel nets worldwide



High opening bottom trawl on a 2000hp stern trawler in West Africa

Midwater trawls, Pair trawls, Bottom trawls, both pair and single boat. High opening bottom trawls (Engel balloon trawls)

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Quota cuts force firms to work together

JAPANESE companies taking part in the north Pacific salmon fishery are having to combine to cope with the drastic cut in their catch quotas.

The companies use mother-ships to process high seas salmon boats taken by fleets of catcher boats. In 1978 an already reduced quota was slashed 35.1 per cent from last year to 15,500 tons under the Japan-USSR agreement.

It was planned to send four mother-ships into the fishery, compared to six in 1977, but the number was still one too many.

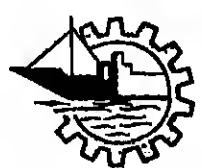
To avoid wasteful competition therefore, the companies were expected to pool their catches and divide them equally later.

The addition of an outboard engine makes this Bengal canoe ready for sea. Fishermen in the state are looking more and more to marine fish as traditional freshwater species climb in price.

INDIA'S BIG FISH EATERS LOOKING TO THE SEA



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CHARACTERISTICS OF THE SHIPYARD

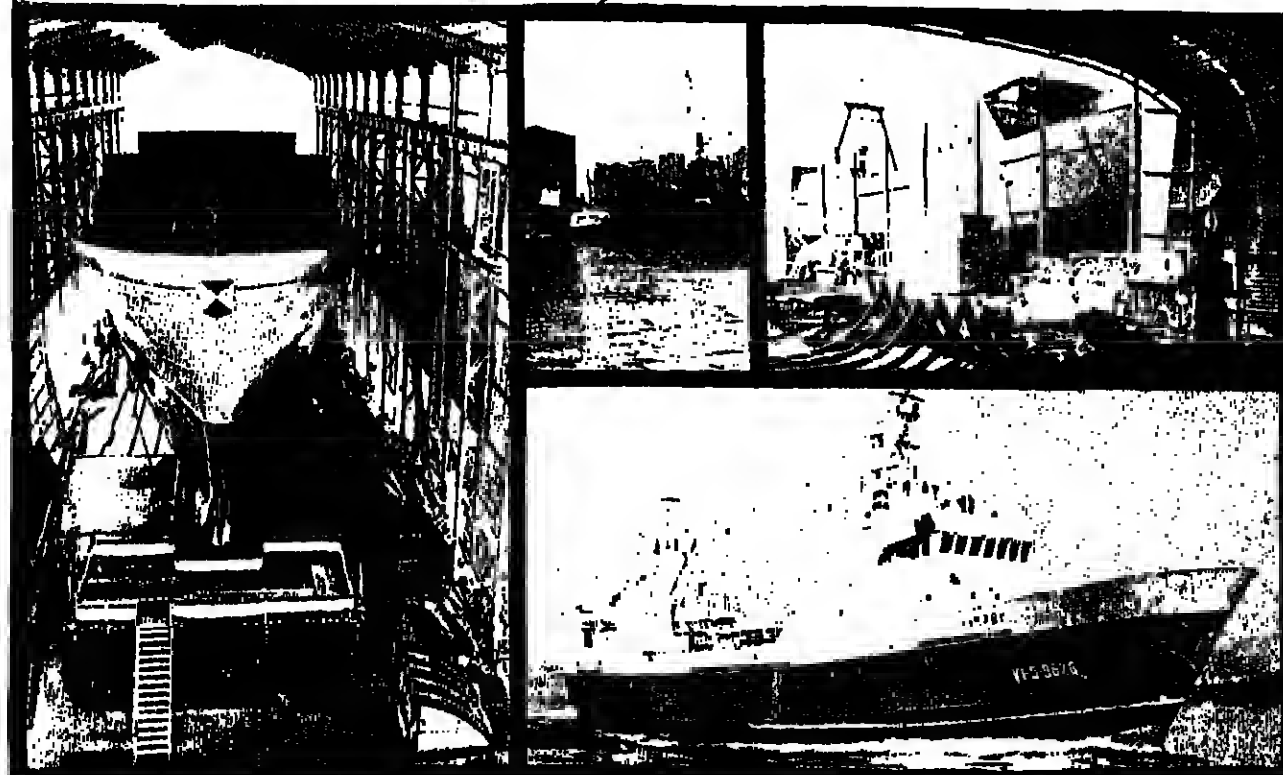
Plater's Shop	Slipway:	
Surface: 800 m ² covered	Length: 70 m.	
Average capacity: 450 Tons per month.	Breadth: 13 m.	
	Lifting Capacity: 1,000 T.	
Prefabrication Surface	Dock Cranes:	
Covered: 1,700 m ² .	2 cranes with capacity up to 12.5 T.	
Uncovered: 720 m ² .	Cranes in Slipway No 2	
Shipway No 1	With auxiliary hook of 5 T.	
Uncovered:	Bridge Cranes in	
Length: 35 m.	2 cranes of 10 T.	
Breadth: 9 m.	Bridge Cranes in	
Approx. dead weight: 350 T.	Shipway No 1	
	2 cranes of 10 T.	
Shipway No 2	Bridge Crane in	
Covered:	Plater's Shop	
Length: 90 m.	2 cranes of 3 T.	
Net breadth: 19.70 m.		
Approx. dead weight: 7,000 T.		

SHIPS FINISHED DURING 1977 (GRT)

417 - MANUEL NORES	331
430 - PUENTE LOURIDO	350
433 - CAP JUBY UNO	280
439 - GAROYA	856
440 - CIEISA SIETE	280
441 - CIEISA NUEVE	280
444 - PESCAVIGO UNO	1,570
448 - CIEISA OCHO	280
517 - VIRXEN D'ARCOS	213
522 - IRQA	182
523 - BALHAF	182
525 - MARRAKECH II	257

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WEST BENGAL, a state in India with a population (over 50 million) bigger than that of most European countries, is unusual for its preference for freshwater fish. But a change is taking place. Because of the high price of the favoured freshwater species, such as carp, consumers are turning more and more towards marine fish.

Traditionally, Bengalis are among the big fish eaters in India. The state's fish production exceeds 280,000 tons a year, of which marine fish now amount to about 50,000 tons, a considerable increase over past figures.

This and much other interesting information about the fisheries situation in West Bengal is given in a study, a "working paper" recently produced by the FAO/UNDP project "Development of Small-Scale Fisheries in South-west Asia."

CEDRIC DAY continues his review of FAO's working papers on small-scale fisheries

Vast area

The delta of the Ganges, of course, provides an immense freshwater area in the Bengal section of the sub-continent, including Bangladesh, formerly East Pakistan and before that East Bengal. The coastline of West Bengal is only some 64 km., which restricts the area of inshore fishing. The government, therefore, is seeking to develop the off-shore fisheries in order to increase fish landings to meet the expanding demand for marine fish and fish products.

General governmental policy is to give financial support for this expansion, encourage fisheries to make fuller use of sharks and trash fish, provide more landing facilities, mechanise more fishing boats and promote co-operative marketing. State expenditure on fishermen in the last fiscal year (1976-77) was more than 26 million rupees, "excluding financing and schemes executed by institutions outside the fisheries administration." Most of the allocation — just over 50 per cent — went to the inland fisheries and something under 13 per cent to the marine sector.

Institutes

As the working paper records, West Bengal has many fishery institutes, such as the Fresh Water Fisheries Research Station, Kullia, the Central Inland Fisheries Research Institutions (3 sub-stations and 11 units), the Inland Fisheries Training Organisation, with a number of units for instruction at various levels up to the most senior, and training in practical

Aid agency funds continue to flow in

A CONTINUING and substantial increase in support for fishery projects by national aid agencies is reported by FAO.

In the past four years, contributions have risen from US \$987,825 in 1974 to \$4,574,515 in 1977. The total amount provided from these sources so far is almost \$20 million, while the cost of proposed projects is \$34.4 million.

"The flow of aid is still rising," Dr. H. D. Ranga Bengar, the senior officer who handles this business, told FNI correspondent Cedric Day. This is indicated by the number of new projects in the pipeline and the many others under discussion.

The aid comes from the assistance agencies of Norway (NORAD), Denmark (DANIDA), Sweden (SIDA), Canada (CIDA), Australia, Freedom from Hunger Campaign committees in various countries and other non-governmental bodies.

A special group are the oil-rich countries of Iraq, Kuwait, Iran, Saudi Arabia and Oman who have set up unilateral aid funds to pay for

FAO target is \$34.4 million

technical assistance they require in addition to their larger-scale development schemes.

Trust funds from these various sources are provided for specific purposes. Dr. Bengar explained each project is agreed by the recipient country concerned, the donor agency and FAO. The latter's role is to provide the technical expertise and other inputs to the project and to be responsible for its operation.

The list of projects is so varied that it covers most

aspects of fisheries — harbours and landing places, fishing vessel development, mechanisation, gear and equipment, handling and processing, distribution and marketing, training of every kind and so on.

Projects range from the very small, such as a pilot scheme for handling and processing small pelagic fish from capture to marketing, to the provision of assistance to the Southern Provinces Fisheries Training and Extension scheme in Sudan at

a cost of \$727,000 over a period of about 2½ years. This money was contributed by DANIDA.

Other examples of projects and costs include: Development of soluble fish protein, Cuba, INORAD \$445,000.

Workshop on the handling of small fish in the Arabian Sea, (DANIDA \$99,700).

Centre for development of traditional fishing communities, Bay of Bengal area, (SIDA \$180,000).

Centre for development of marketing of fish products, Sri Lanka, (SIDA \$547,000).

Assistance to the South China Sea fisheries development programme, ICIDA \$2,800,000.

Motorisation of fishing canoes in Guinea, ICIDA \$1,767,000.

Training centre on improved fishing, Lurantuka, Flores, (UNEP \$280,567).

CREDIT FOR FISHERMEN

TO ASSIST development of the fishing industry in Central Kalimantan, the Indonesian government has advanced credits worth Rp.210.5 million (about £20,000) to fishermen in the province since 1975.

Extended through the small investment credit scheme and the working capital credit scheme,

they have been used for modern boats.

It is estimated that total production of Indonesia's fishing industry this year will be about 1.65 million tons. In 1976, the Indonesian catch was about 1.45 million tons.

Estimates of exports for 1978 are that they will reach about 73,800 tons. This will include 2,700 tons of tuna to markets in Japan and Italy.

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Buoyancy of Net buoys: 2-310 Kg.

Buoyancy of Bar buoys: 7.5-258 Kg.

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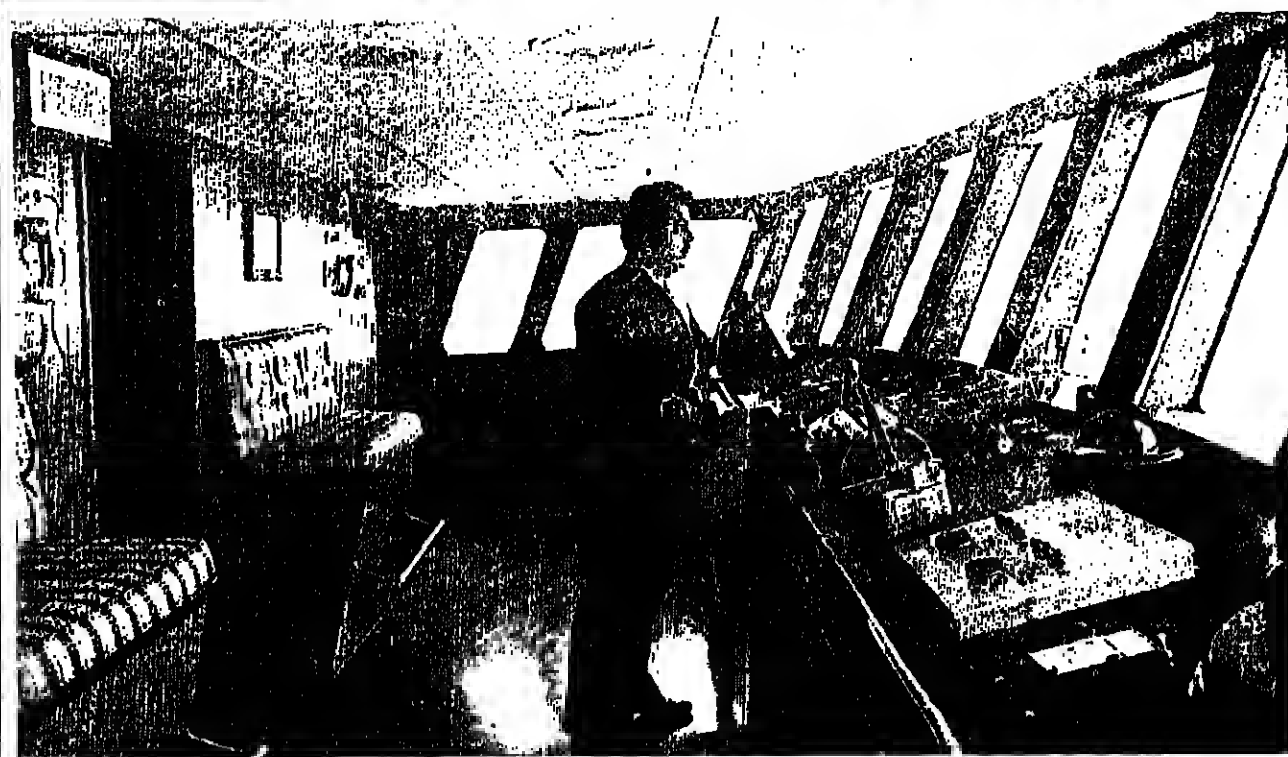


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THE BOOKS PAGE



Top of the high earnings league — the master of a modern U.S. tuna seiner.

Being long months at sea is a tough life lived in luxury for...

TUNAMEN

MICHAEL K. ORBACH is an anthropologist. He worked as a deck crewman aboard tuna purse seiners for several months and has written an absorbing account of his experiences.

His is the first definitive book on the U.S. tuna industry* which is based in San Diego and San Pedro, California, and Puerto Rico. Orbach himself sailed out of San Diego.

Drawing a realistic picture of the American seaman and his life Orbach writes: "First and foremost, he makes a lot of money. It is common for a regular deck crewman to make between \$20,000 and \$30,000 a year, and for skippers to make between \$50,000 and \$100,000."

All crewmen are paid on shares of the catch. The lowest gets one share and the captain three. The chief engineer, navigator and other crewmen get something in between.

On present tuna prices, says Ed Silver of the American Tunafish Association, earnings have risen even higher. Crewmen are averaging \$25,000 to \$35,000 and captains three times that much.

Orbach describes the "spectacular" food aboard modern seiners. Prime ribs of beef and steak are a mainstay. Breakfasts are served to individual order. Usually there is a cocktail hour. Appetisers are served before dinner, and there is wine and beer with lunch and dinner.

Accommodation is first-rate. The crew enjoy comfortable bunks, clean toilets, hot showers, air conditioning and carpeted living quarters.

But for days on end, when no fish are sighted, life can be sheer boredom. And there is always the long separation from home. Trips average 40 to 60 days.

Orbach says that 75 per cent of the U.S. high-seas tuna ships are in the 600 to 1,200-ton range. The average number of trips made annually by a tuna boat in the eastern tropical Pacific is 3½. Four trips is considered good and five excellent.

WILLIAM C. MILLER reviews a vivid account of a characteristic U.S. contribution to modern fisheries

"No one seems to know when fish will be spotted and a set made," he says. "On my first trip we set on only 27 of the 57 days we were at sea. Twelve times there were intervals of from two days to a week between sets. The rest of the time, from sunrise to sunset, we spent searching."

Working a seine net the size used by tunaboats differs from other fishing methods on similar sized boats, he writes.

"The seine net on tunaboats is primarily simply a way of putting up a corral around the tuna, and then slowly tightening the boundaries until the fish are swimming in the net right next to the boat. Only at the very end of the process

are the fish in any way touching or suspended in the net itself, and the skippers are very careful to keep that suspension time to a minimum.

"The net is simply too large (1½-mile long, 60 fathoms deep and weighing seven tons) to be controllable after it has been set, and the fish weight contained in a good set (50 to 100 tons) is too great for one to depend on even the strongest equipment to hold."

Net setting begins when the seine skiff is released from the stern and slides into the water. It tows one end of the net on the seiner's port side. With the other end fastened to her stern, the seiner circles the school, always with the fish on the port side.

After the seine has been pulled taut at the bottom, the powerblock starts hauling.

Launching the porpoise chase-boat with the seiner cruising at 15 knots leaves its dampers too, but the main casualties are back and kidney injuries suffered by the drivers speeding over rough seas.

"If you have ever watched a cowboy herd cattle on a horse, that is about the way the speedboat drivers herd the porpoise — zig-zagging back and forth amid sprints to get ahead of a renegade section of the school or keep up with the whole school itself," writes Orbach.

"From the seiner's crow's nest the captain directs the roundup by radio. He orders the set made when the porpoise are hunched up in a circle, the fish below them.

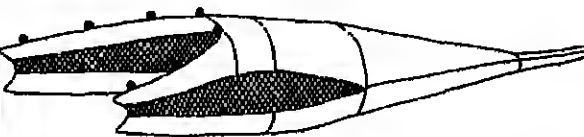
A final note about the spectacular food and euphoric drinks: the crew pays. It comes out of their share of the catch.

"Hunters, Seamen and Entrepreneurs — The Tuna Seiner of San Diego by Michael K. Orbach. University of California Press. 314 pages. Price \$12.75.



How's this for the good life? In their leisure hours a modern tuna seiner's crew relax in the padded leather luxury of their lounge. The skipper's accommodation can be little short of opulent. From his bed (right) he can pick up a phone and run his ship, or call home thousands of miles away.

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204	3 fathom	£75	£85
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207	12 fathom	£225	£235
208	14 fathom	£285	£295
209	16 fathom	£345	£355

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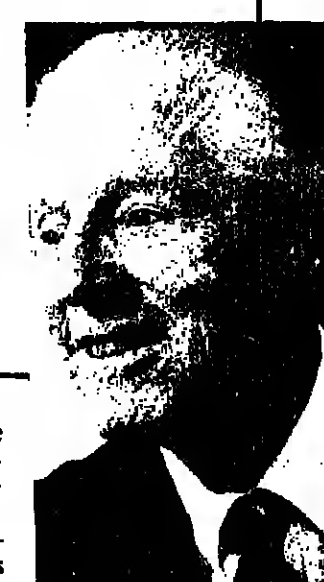
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walkabout talkabout

with Arthur J Heighway



IN THE April issue I mentioned the forthcoming appearance of the book *Salmon and Trout Farming in Norway* by Dr. David J. Edwards. It suffered a printing disaster, now happily remedied.

With printing of the book completed it was found that corrections made in proof stages had not been carried out and the print could not be accepted. A complete reprint after correction was therefore necessary and this was readily accepted by the firm in question. The volume will be available in July and apologies are extended to those affected by the delay.

Many other reprintings of books have also been in hand, but happily not for the same reason. The cause here has been steady demand occasioned by the expanding need the world over for fishery information.

This is the result simply of the world's growing population and the increased use that must be made of marine resources illustrated by national extensions of limits to 200 miles. So reprints needed are numerous.

Most notable probably is the fifth such reprint of the first major work issued by us for FAO, *Fishing Boats of the World I*, in 1955. That is its own tribute to the quality of the work by contributing scientists and technicians.

Translations of some of our specific books into other languages are also increasingly required and recent arrangements have been for works into Russian, Icelandic and Spanish.

Today FAO is continuing its service, more particularly in the training of fishermen to exploit the waters secured to them by the now almost universal 200 mile limit.

The latest manual now in hand deals with fishermen training, and, on that point, I understand FAO has interest in recruiting more master fishermen able to teach the skills associated with the use of

small inshore craft. English speaking master fishermen are especially desired for that language is so widely used.

In the development of these inshore fisheries several previous manuals have been issued under the titles: *Mending of Fishing Nets*, *Netting materials for Fishing Gear* and *Fishing with Light*. All have been eagerly accepted and, in some cases, there has been need of reprints.

Also in this class of instructive work is John Garner's *How to Make and Set Nets*. This was first issued sixteen years ago and with steady reprinting has become one of our top steady sellers.

Garner's first work was followed in 1967 by *Modern Deep Sea Trawling Gear*, which also proved a good seller and has done a notable job for the industry.

Another book from him is about to appear, namely *Pelagic and Semi-Pelagic Trawling Gear*. This will be in the same format as David Thomson's recently issued *Pair Trawling and Pair Seining*.

Both Garner's and Thomson's works are fitted to the requirements of modern development and greater catching effort being used in hitherto not heavily exploited stocks.

One of those new stocks hitherto neglected as a food source is blue whiting, which is proving quite a world-wide resource in certain waters.

Under pressure of need it is now being commercially caught and is skillfully adapted to meet Japanese taste by conversion into fish sausage. A British house recently secured a sizeable contract for this product so adapted to Japanese taste.

This adds to other recent advances in the fuller use of suitable fish flesh and the world will certainly see in future many more skilful adaptations of fish to human consumption.

Shark varieties

Already Australia has accepted shark (although not under that name) as a staple and acceptable product. But then there are some 70 or more different species of shark and the one most widely used for food is a simple little chap of about five feet in length and not the white pointer shark of which the record weighed 2,322lb. — a quite superb specimen, well over 20ft. in length.

At a recent party whereat a number of knowledgeable and important people in the fishery world were gathered I heard an interesting discussion on the stock of herring and its problem of conservation.

The plain, important fact is that this fish has been so consistently heavily fished, especially in recent years, that the stock has been depleted to the point of exciting concern for the future of the industry.

To that end British authorities have imposed a total ban on fishing it in the North Sea for a period. This has occasioned

resentment in some Continental countries whose nationals have conducted the fishery for centuries, and decline to accept the need for such action.

The same problem of overfishing leading to exhaustion of stocks applies increasingly to some other fishes. Was there not need therefore, the suggestion was made, for a concise and factual work to be prepared in popular form stating the historical facts about the past productivity of the herring fishery, its rich yields down the centuries and leading up to the proven decline over recent years of the annual harvest?

Fish figures

There have been books aplenty on the herring as a fish, but the assembly of the historical facts of decline in catch may be the only way of convincing operating fishermen of the need for acceptance of stock management by scientific assessment.

The scientists, of course, have a wealth of statistics at their command, but the impact of the figures has to be conveyed to the great body of fishermen in convincing form to win their consent and support.

The question as thus posed emphasises the importance and value to the fishing industry not only of books dealing with the subject, but of the specialised trade periodicals that serve national and world fishing activities.

This branch of the world of print has expanded worthily in recent decades and is doing excellent work in featuring developments in all phases of the industry.

To see that management is applied and maintained as needed in relation to stocks of vital importance is certainly not the least of the services required in the future. So I leave to be picked up by whom Fate ordains the idea for a concise, factual and convincing work on the Commonsense of Fish Conservation.

Generous as Nature is in her service, man's capacity for modern reaping of her riches is so great that it can imperil even her fecundity.

The great book that is developing under the title *Advances in Aquaculture* from the Conference at Kyoto under FAO auspices is due to appear by the end of this year.

I am told that composition of the text now in the printer's hands will run to a thousand pages and as such, the book will rank as the largest volume yet produced for FAO. It will certainly be a massive and noble volume and will provide much basic guidance on modern practices.

Occasionally, twirlings of titles brighten our daily mail. Two such caused amusement but no real problem in solution: *More Skittish Fishing Craft* I hope would really not offend our esteemed Scottish author, and *Fishing by Night* was easily identified as a possible improvement on *Fishing with Light*.

Dormant scales

A NEW four-page brochure is available describing a range of all-steel dormant scales available from an American company. The scales have platform arcus of 48 sq. ft. and capacities up to 10,000lbs.

The brochure contains ordering information and describes the electronic options offered including the DW550 digital weight indicator.

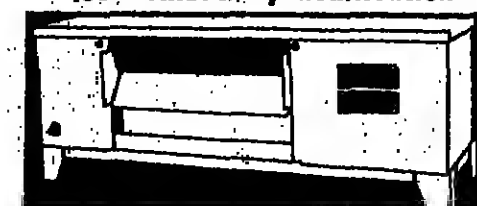
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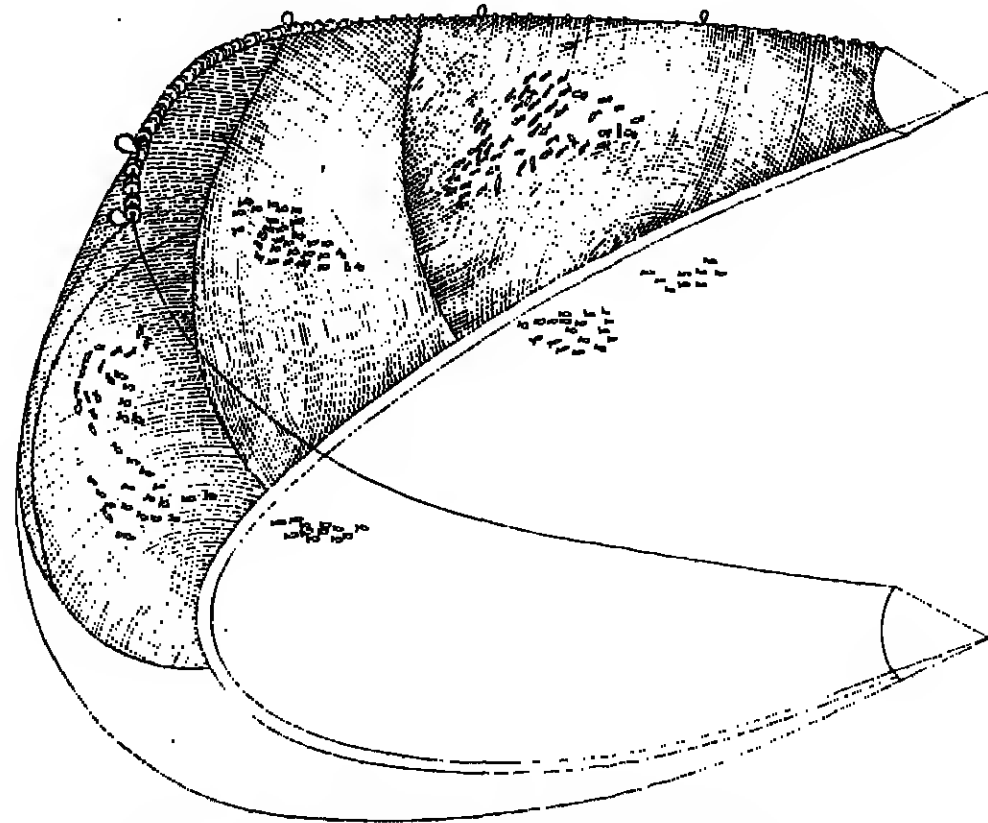
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BARGAIN CORNER

Escape to Sea — John Burgess

A vivid description of the author's escape from deskwork in the '30s, via the Australian bush, to the sea career which gave practical knowledge for his current writings. His world-wide adventures pointed to many ways in which a living can be made from the sea; the book ended with guidance on fishing methods, places, training. Some of this detail is now dated which means you can now buy this lively yarn for £1 only.

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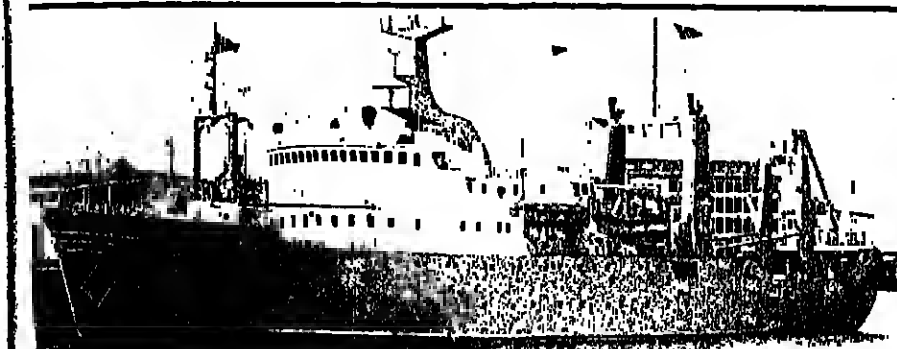
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TWO-DAY SEMINAR AT NOR-FISH

A SPECIAL international seminar on Post-harvest Technology and Investment in Developing Countries is to be held in Oslo in November in conjunction with the 1978 Nor-Fishing exhibition.

It is being organised with the assistance of the Food and Agriculture Organization and its chairman will be Mr. W. P.



The scientists' supership

from page 27

At this time of the year, weather and ice conditions are generally favourable for an accurate assessment. These estimates will form the basis for determining the quotas for the following year.

The operational plan is established in Bergen before sailing and modifications are made later at sea. An area is chosen and a grid plotted on it. The G. O. Sars will make repeated passes.

A typical procedure is to register by echo sounders over a distance of one nautical mile how much fish there is on the bottom of the sea.

Abundance

These data are interpreted in reference to controlled results obtained at facilities in Norway where set-ups are arranged to represent actual conditions on a reduced scale. Trawl samples are taken to obtain sizes by comparison to tables of value for echo intensity. The basic assumption is that the density or abundance of fish between the course lines is the same as within the course lines in the area actually surveyed.

On a typical day from four to six trawl samples are taken in 24 hours. A change in impression or registration on the echo sounder recording prompts a decision to put out the trawl and recover a sample.

The varying abundance of fish in a shoal is not so important as the size and composition of the shoal. A pelagic or bottom fish is not as needed to make a

representative selection of the fish that caused the change in impression.

The trawl drag is brief — 20 to 30 minutes. The whole trawling operation takes about an hour.

With the catch on board the standard procedures are sorting, classification and taking of separate samples, followed by measurements of size and weight, stage of maturity and determination of age and stomach content.

All this information is recorded on punched forms that are fed into a Nordatu computer.

Each day the scientists meet to discuss problems and progress. This is considered essential to the overall accuracy of the ship's scientific programme.

If mistakes are discovered in registration or interpretation of data, they are corrected within 24 hours.

The Institute of Marine Research wants an older and smaller fishery research vessel, the Johan Hjord, replaced by another ship of the size and capability of the G. O. Sars.

This new ship will do the same job and be similarly equipped with Simrad electronic, Nordatu computers, chemical and physical labs, oceanographic meters and satellite navigation along with Decora and Logon.

The experience with the G. O. Sars will lead to modifications of future vessels, such as the working and location of the gear.

Appleyard, Chief of the Fishery Industries Development Service.

The purpose of the seminar, says a draft prospectus, is to bring into sharper focus the post-harvest aspects of fisheries development. It will examine such issues as the efficient transfer of post-harvest technology, infrastructure, processing and market investment needs of developing fisheries.

Also to be considered will be the most effective means of international collaboration in financing such investment.

Nor-Fishing 78 is seen by FAO as a "particularly opportune occasion" for an international forum of this kind.

The seminar will be over two days — November 21 and 22 — with registration on Monday, November 20. The venue will be the same as the international exhibition — Oslo's Skystad Centre.

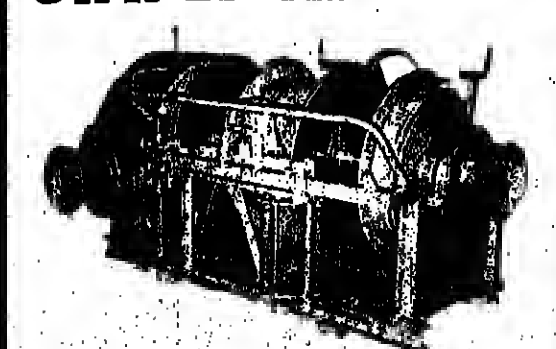
It is to be divided into three major plenary sessions. Each of these will be guided by a discussion leader who will be supported by a small panel of experts. Every chance will be given to participants to take part in discussions.

The seminar will open with an introduction by Mr. Herman Watzinger, Assistant Director General in charge of FAO's Fisheries Department.

Post harvest technology and investment needs will be covered during the first day. Session three on the second day will deal with the funding of investment.

Another Nor-Fishing seminar, on November 24, will deal with the Norwegian blue whiting fishery, whose catch set a new record this year of well over 100,000 tons.

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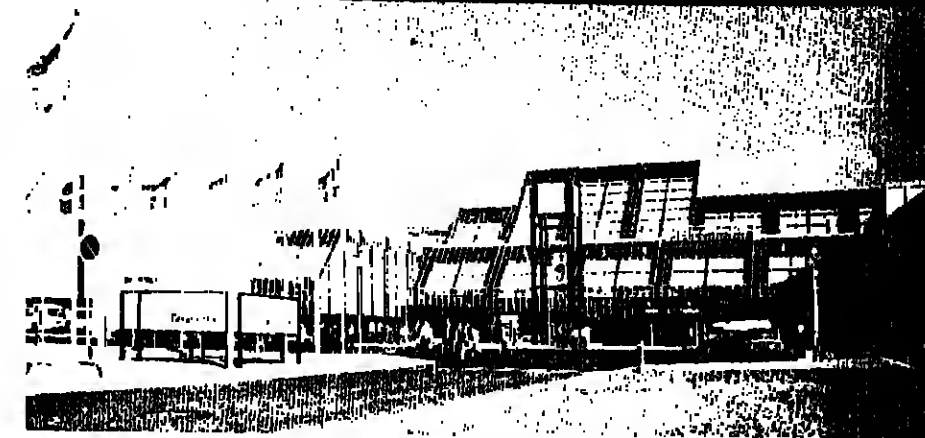
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Meetings and exhibitions



The Bella Centre, Copenhagen. Venue of the 1979 World Fishing Exhibition

INDUSTRIAL and Trade Fairs International, organisers of the World Fishing Exhibition, announce that the next event will be in Copenhagen, from June 26 to July 1, 1979, at the Bella Centre, a purpose-built exhibition hall with full decade facilities.

Reflecting Danish interest in fish farming, the exhibition is to have an aquaculture section and, for the first time, will include general marine products.

The exhibition is supported by the Danish Fishery Organisation, the Danish Ocean Fisheries Organisation, the Ministry of Fisheries, and the Association for Processing and Export of Fish Products.

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WHAT ARE THEY DOING OUT THERE?

Canada concerned over foreign trawler build-up

FOREIGN fishermen may be deliberately flaunting Canada's 200-mile fisheries zone, government officials allege. But they are not yet prepared to name countries which may be encouraging their ships to overfish just outside the Canadian east coast zone.

"We are concerned that there appear to be more vessels than necessary taking specific quantities of fish allocated to countries," says Art May, director-general of resource management for the Fisheries Department.

Grand Banks

The area causing most concern is the eastern reaches of the Grand Banks. Overfishing is also suspected on the Flemish Cap.

Control of fisheries outside Canada's zone may be strengthened by international agreement to create the Northwest Atlantic Fisheries Organisation (NAFO).

Approval for this was granted at a special meeting in May in Ottawa.

However, the EEC have not accepted NAFO, largely because it concedes Canada's special role in the management of stocks outside her own zone.

Inspection

NAFO will replace the International Commission for the Northwest Atlantic Fisheries but Canada will still be able to board and inspect the log books of ships outside the zone.

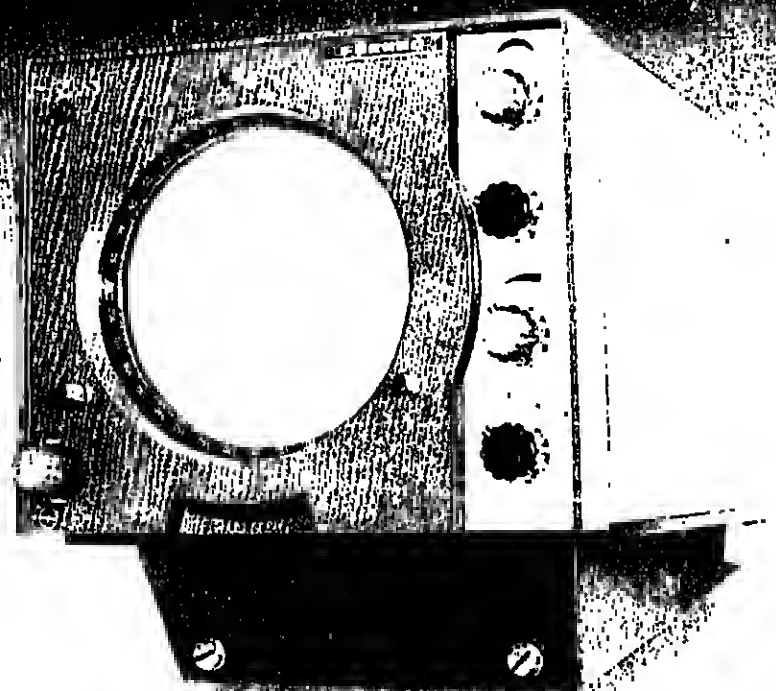
Violators cannot be arrested, but complaints can be made to the country involved. Repeated infractions could result in a reduction or elimination of fishing privileges inside the zone.

Experts say that 10 per cent. of the fish caught off the east coast is taken outside the zone.

Mr. May said it appears that vessels fish for a while outside the zone waiting for Canadian licences to become valid. After the licences expire, the foreigners leave the zone stopping for more fishing just over the line.

"At times this year we have had as many foreign vessels outside the zone as we have had inside, yet there is less fish for them to catch. We want to find out what they are doing out there!"

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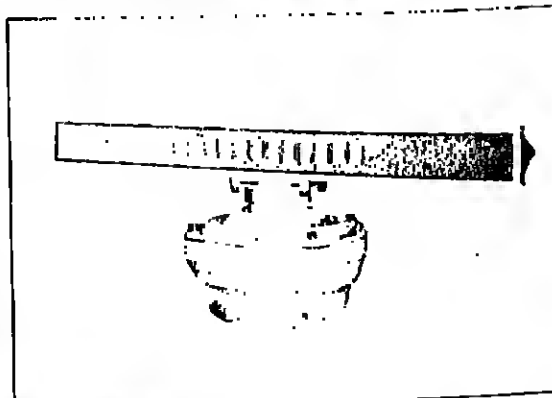
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